# ENERGY SECURITY FOR PRESENT AND FUTURE GENERATIONS – IS THE LEGAL FRAMEWORK FOR THE DEVELOPMENT OF RENEWABLE ENERGY TECHNOLOGIES IN THE EUROPEAN UNION EFFECTIVE?

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## ABSTRACT

Ensuring secure supply for present and future generations has always been an issue since medieval times. It may even have become more critical in recent times as world supplies of conventional sources of energy face increasing challenges of reserves depletion occasioned by uncontrolled and unsustainable consumption. It is argued that the present generation has obligations towards future generations to ensure that existing energy reserves are not depleted while at the same time developing new and alternative sustainable energy sources. One of the ways out of this dilemma is the development of renewable energy technologies. The research sets out to determine how effective the law is in the development of renewable energy technologies within the European Union in furtherance of this obligation.

The EU has evolved a legal framework through directives and regulations for the development of these technologies to ensure energy security. However, the argument is that the legal framework is not effective enough. This is due to some reasons including the lack of enforcement mechanisms and the fact that such existing laws are subsumed under general energy policy of the EU. As such, there is inadequate focus on renewables. Furthermore, the existing legal framework has a background rooted in climate change considerations such as carbon emission reduction. The research therefore suggests a separate legal regime for renewables.

It is established that, even though the existing legal framework has gone a long way to assist renewable energy technologies, there may be a need for a separate legal framework to ensure an adequate focus on renewables in furtherance of the obligation to future generations.

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background

> Energy is essential to improving the quality of life and opportunities in developed and developing nations. Therefore, ensuring sufficient, reliable and environmentally responsible supplies of energy at prices reflecting market fundamentals is a challenge for our countries and for mankind as a whole.[1]

This statement aptly describes the thrust of this research in its application to the quest for energy security for the benefit of present and future generations within the EU. The definition of energy security has grown beyond merely ensuring sufficient and reliable supplies.[2] It now encompasses the development of environmentally responsible, economically beneficial and socially beneficial energy sources.[3] In essence, energy security requires the satisfaction of economic, social and environmental factors, which are in line with the multidimensional nature of the concept of sustainable development. This concept provides a theoretical/conceptual framework for this research and is discussed further under chapter two.

The fundamental role energy plays in ensuring sustainability of the human race has been evident over centuries. Some environmentalists have, for instance, identified the unsustainable consumption of natural resources as the major factor that led to the decline of ancient civilizations[4]. The unsustainability in energy consumption can also be seen in the energy crisis associated with the medieval agrarian economy of the 14th

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[1] Communique issued by the G8 Nations at their summit in St. Petersburg, Russia, on July 16, 2006. Available at http://en.g8russia.ru/docs/11.html. accesssed on 11 December, 2014.
[2] Bob Tippee, '*Defining Energy Security*' (2012) Vol. 110 No. 1C Oil and Gas Journal 14.
[3] Ibid.
[4] Allan Savory, *Holistic Resource Management* (Island Press, 1988).

century.[5] The system could no longer satisfy the growing energy demands of the emerging industrial age and reached its ecological boundaries at the end of the 18th century, a period which saw the propagation of technocentrism, with the resultant switch to fossil fuels to power the industrial revolution.[6] The rise of consumerism in the 20th century, fuelled by the wealth of the developed countries of the northern hemisphere, has led to a severe depletion of available reserves of conventional sources of energy, necessitating a need for sustainable means of ensuring energy generation and consumption. [7]

As far back as the year 2000, statistics estimated that both conventional and non-conventional oil reserves will meet the projected world demand only for some 50 years and gas reserves correspondingly for eighty years.[8] Conventional energy sources are finite and have no regenerative capabilities like other forms of natural resources.[9] What the recent discovery of unconventional gas has done is to give the present generation more time to identify alternative and sustainable energy sources. As far back as 2006, the International Energy Agency (IEA), in its 2006 Report, observed that, by 2030, global energy demand was expected to rise to alarming levels, requiring investments of over $20 trillion in energy infrastructure to satisfy demand.[10] However, investments in green energy technologies would lower these projections considerably.[11] In its 2015 Report, the IEA further observed that, as oil and gas become more expensive to extract, coupled with the falling costs of renewables, the balance was bound to shift towards low carbon technologies.[12] The importance of renewable energy sources in the drive towards ensuring sustainability in the energy sector can therefore be said to have been acknowledged at the highest levels.

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[5] Holger Schlor, Wolfgang Fischer and Jurgen-Friedrich Hake, '*The Meaning of Energy Systems for the Genesis of the Concept of Sustainable Development*' (2012) 97 Applied Energy 192-200.

[6] Ibid.

[7] Sylvia Lorek and Doris Fuchs, '*Strong Sustainable Consumption Governance – Precondition for a Degrowth Path?*' (2013) 38 Journal of Cleaner Production 36-43.

[8] Michael Jefferson, '*Accelerating the Transition to Sustainable Energy Systems'* (2008) 36 Energy Policy 4116-4125.

[9] Michael Carley and Ian Christie, *Managing Sustainable Development* (Earthscan Publications 2000) 28.

[10] International Energy Agency, *The World Energy Outlook, 2006. Available at* http://www.worldenergyoutlook.org/summaries2006/english.pdf accessed on 6 March 2013

[11] Ibid.

[12] International Energy Agency, '*World Energy Outlook 2015*' (Executive Summary) <iea.org/Textbase/npsum/WEO2015SUM.pdf.> accessed on 8 March 2016.

Although no form of energy can be utilised without affecting the environment in one way or the other, renewable energy technologies are treated as sustainable for their significantly lower levels of degradation.[13] Although new reserves of fossil fuels are being discovered in parts of the world with which the European Union (EU) has a relationship, tensions in the global energy sector, occasioned by depleting reserves, coupled with the panic that resulted in Europe following the Russian Ukrainian gas dispute of 2009,[14] highlight the growing need for urgent efforts in ensuring energy security for the EU, especially through the development of sustainable energy sources.

The urgent efforts are examined from the angle of the obligations of the present generation to future generations. These obligations are underlined by theories and the concept of sustainable development examined in detail in chapter two. The theories are relevant aspects of the social contract theory and Rawls' theory of justice. The concept of sustainable development is seen as the modern reflection of those theories. The argument is that ensuring development that meets the needs of the present generation without jeopardizing the ability of future generations to meet their own needs is an obligation on the part of the present generation. One way by which such an obligation can be carried out is through investments in renewable energy technologies.

## 1.2 Why the Focus on Renewable Energy Technologies?

It may be said that ensuring sustainability in the energy sector raises two main duties rooted in the obligation of the present to future generations and which are as follows:

a. The duty to ensure carbon emission reduction from fossil fuels to reduce or eliminate the negative consequences of climate change for the benefit of present and future generations. (Energy efficiency and climate change related).

[13] Jefferson W. Tester et al. *Sustainable Energy: Choosing among Options* (Massachusetts Institute of Technology Press 2005) 4.

[14] Andrey A. Konoplyanik, '*Gas Transit in Eurasia: Transit Issues between Russia and the European Union and the Role of the Energy Charter*' (2009) 27 Journal of Energy and Nat. Resources Law, 445.

b. The duty to ensure energy security through investments in sustainable energy sources, including renewable energy technologies for present and future generations (energy security).

Energy security can be achieved through energy efficiency measures, but the focus will be on the second duty through the utilization of renewable energy sources. It is believed that embarking on the second duty has far reaching effects when compared with energy efficiency measures. For instance, the limitations of energy efficiency were highlighted by the Department of Energy of the United States, which observed that:

> Even with aggressive conservation and energy efficiency measures, an increase of the earth's population to 9 billion people, accompanied by rapid technology development and economic growth world-wide, is projected to produce more than double the demand for energy (to 30TW) by 2050, and more than triple the demand (to 46TW) by the end of the century. The reserves of fossil fuels that currently power society will fall short of this demand over the long term, and their continued use produces harmful side effects such as pollution that threatens human health and greenhouse gases associated with climate change.[15]

Energy efficiency deals mostly with behavioural restraint in energy consumption, and may not be as far-reaching as the development of alternative energy sources. For instance, Mancisidor *et al* observed that most of the EU directives on energy efficiency are oriented to establish minimum energy efficiency requirements or design standards and labelling systems to promote efficiency in energy consumption.[16] They stated that this may not translate to a real change considering current increasing energy consumption patterns.[17] Renewable energy sources go beyond being agents of restraint

[15] US Department of Energy, '*Basic Research Needs for Solar Energy Utilization*' 3 (2005) http://www.sc.doe.gov/bes/reports/files/SEU_rpt.pdf accessed on 15th January 2013

[16] Itziar Martinez de Alegria Mancisidor *et al*., '*European Union's Renewable Energy Sources and Energy Efficiency Policy Review: The Spanish Perspective*' (2009) 13 Renewable and Sustainable Energy Reviews 100-114 at 112.

[17] Ibid.

control. They ensure the development of alternative energy sources, leading to a more reliable and resilient energy system.[18]

It must be pointed out here that renewable energy technologies are low carbon technologies. However, this research focuses on renewable energy technologies, bearing in mind the fact that some other low carbon sources such as nuclear power have severe environmental issues associated with them while they may in actual fact be reliant on non-renewable natural resources for power generation. For instance, nuclear power plants rely on uranium deposits for their operations. The classification adopted by Mornann is instructive here.[19] He distinguished between 'clean energy' and 'renewable energy'.[20] The former refers to energy sources such as nuclear fission, natural gas and carbon sequestration; while the latter refers to energy sources which are, in addition to being renewable, are also clean.[21] However, several laws and policies on low carbon transition are relevant to this research and will be examined.

## 1.3 Research Purpose

### 1.3.1 Aim and Objectives

The thesis sets out to answer the following question: has the existing legal framework put in place to support the development of renewable energy technologies been effective? In answering this question, it is observed that energy security is coordinated within the ambit of general EU energy policy which is moving towards sustainability. However, the legal framework as it is addresses sustainability issues within the ambit of a general energy policy with no adequate focus on renewable energy technologies. Furthermore, where some of the existing laws have focused on renewable energy technologies, their provisions have not been stringent enough. There will therefore be a critical analysis of the law in relation to renewable energy technologies to determine

[18] Union of Concerned Scientists, '*Benefits of Renewable Energy Use*' http://www.ucsusa.org/clean_energy/our-energy-choices/renewable-energy/public-benefits-of-renewable.html accessed on 5 May, 2015.
[19] Felix Mormann, '*Requirements for a Renewables Revolution*' (2011) 38 Ecology L.Q. 903 at 910
[20] Ibid.
[21] Ibid.

whether more still needs to be done, bearing in mind that they need the protection of legal instruments to exist.

A lot has been written about climate change and how renewable energy technologies can be made to reduce carbon emissions. The focus in this research is rather on how these technologies are utilised to ensure energy security through the instrumentality of the law. This research highlights how the existing legal framework has elevated climate change/carbon emission reduction issues over and above energy security issues. The application of conflicting climate change parameters by the legal framework and has severely affected the development of renewables.

The aim of this research is premised on certain objectives – a critical examination of:

- The obligation of the present generation to ensure that development for the benefit of future generations is not compromised. It is established that the present generation has the duty to ensure sustainability in energy production and consumption for the benefit of present and future generations.

- the theories underlining the obligations of the present generation to future generations. Fulfilment of these obligations may be better achieved by utilising renewable energy technologies. The link between the obligation to future generations and theories such as aspects of the social contract theory and Rawls' theory of justice is examined.

- the link between these theories and the concept of sustainable development as. It is argued that the concept of sustainable development is the modern version of the theories mentioned earlier.

- the evolution of these obligations into legal principles which provide a foundation upon which a legal framework can be built. It is argued in chapter three that the principles that make up the concept of sustainable development have evolved

into legal principles that can form the basis of an effective legal framework for the development of renewable energy technologies.

- An examination of how the legal framework through which renewable energy technologies are developed ensures economic, environmental and social development (the three arms of the concept of sustainable development). It is argued that the evolving legal framework will enable renewable energy technologies to contribute to energy security. This is because the definition of energy security has expanded to encompass economically viable, environmentally responsible and socially acceptable energy sources.[22]

- the role of renewable energy technologies in ensuring energy security beyond their traditional role of ensuring carbon emission reduction. It is argued that one major factor which militates against the growth of renewable energy technologies is the perception that they are meant for carbon emission reduction, bearing in mind that climate change is a very contentious issue.

Further to the objectives, there is a determination of:

- the level of progress of EU law on renewable energy technologies in the drive towards energy security.

- whether renewable energy technologies can ensure sustainability in energy consumption utilizing legal tools.

The argument is that the evolving legal framework for the development of renewable energy technologies has aided their development. However, there are a few issues identified which render the legal framework ineffective. For instance, renewable energy

[22] See n. 2.

technologies are being developed within a general legal framework for energy, with renewable energy sources subsumed under the general energy policy of the EU. Also, the legal framework is evolving from the angle of climate change/carbon emission reduction concerns. This has affected the growth of these technologies as climate change issues are contentious with arguments for and against its authenticity. It is argued in the research that energy security issues are real and that the evolving legal framework should rather utilise such production and supply concerns.

### 1.3.2 Justification

The existing legal framework in the EU is rooted in climate change/carbon emission reduction concerns to the detriment of energy security concerns. It is argued that the concept of sustainable development can be traced to the need to conserve the rapidly declining resources of the planet for the benefit of future generations. The issue of carbon emission reduction (although a sustainability issue) came second to the initial issue of conservation. There is a tendency in the EU to view renewable energy technologies as tools for carbon emission reduction. Even the Renewables Directive is rooted in climate change concerns. This has led to challenges militating against the development of these technologies, especially from those who challenge climate change concerns. Viewing renewables as tools for achieving energy security rather tools of carbon emission reduction should be rooted in policy considerations. Their development should not be based on the scientific uncertainty associated with carbon emission reduction concerns. There is therefore a need to re-examine the issue of sustainability in energy production and consumption. Its main purpose is energy security before carbon emission reduction.

Also, general energy security concerns have subsumed renewables under conventional energy sources. Even in situations where issues of energy security are being addressed through legal frameworks, the focus has been on conventional energy sources with inadequate attention given to renewable energy technologies. Therefore, though the evolving legal framework has aided the development of renewable energy technologies,

it is not effective enough. The issue then is whether there is a need for a separate legal framework that is adequately focused on renewables and devoid of climate change and general energy security concerns. It is submitted that renewable energy technologies may benefit from a separate legal framework dedicated to their development in fulfilment of the obligation to future generations.

Why is the law needed to ensure energy security? In recent years, there has been a reliance on market forces to coordinate energy matters.[23] Bollard and Pickford are of the opinion that what market forces have so far succeeded in doing is to introduce unenforceable guidelines and voluntary, negotiated agreements rather than enforceable laws and regulations.[24] The time has come to move from the stage of market-based instruments to an effective legal framework. There is a need for hard laws to provide legal cover for investors who wish to take the risk of investing in renewable energy technologies. Absence of such laws may deter investors from vital research and development processes needed to evolve these technologies.

Furthermore, Danwitz observed that there is a need for a legal regime for renewable energy technologies[25] as they cannot develop without such a legal regime. Legal regulation has benefitted conventional energy sources. It will however be shown that renewable energy technologies may have been subsumed under the existing general legal regime on energy generation (which includes conventional energy sources).The question of whether such a regime is suitable or applicable to renewable energy technologies will be examined. Also, the question of whether the existing legal regime for climate change/carbon emission reduction is applicable on issues of energy security will be examined. Thirdly, even market-based mechanisms need a strong and effective legal regime to adequately protect investments in renewable energy technologies.

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[23] Patrick Blum, *European Commission Plans for Energy Market Deregulation Offer Mixed Prospects for Consumers*' New York Times, November 13, 2007, available at http://www.nytimes.com/2007/11/13/business/worldbusiness/13iht-renelec.1.8311283.html. Accessed on 11 December, 2014.

[24] Allan E. Bollard and Michael Pickford, '*New Zealand's "Light-Headed" Approach to Utility Regulation*' (1995) 2 AGENDA 411.

[25] Thomas von Danwitz, '*Regulation and Liberalization of the European Electricity Market – A German View*' (2006) 27 Energy L.J. 423 at 432.

The time to act is now, as all efforts embarked upon in the past have not yielded much in terms of sustainability in energy consumption. As Bossel said, threats to sustainability require urgent attention when the rate of change approaches the speed with which the system can respond to such change, as the rapid rate of change overwhelms the ability of the system to respond to such a change, leading to unsustainability.[26] The alarmingly high rate of depletion of conventional energy sources, coupled with the fact that no new natural resource base comparable with them has been discovered, necessitates the urgent need for sustainability measures in energy consumption.

Statements of intention appearing in legal instruments and declaratory instruments acknowledging the obligations of present to future generation represent soft law. However, mere intentions are not enough. The provisions of some of the existing laws do not appear to create strong binding obligations needed to ensure the development of renewable energy technologies. There is therefore a justification for a new legal framework that ensures:

- effective and binding obligations are created with enforcement mechanisms.
- Adequate focus on renewable energy technologies
- Application of energy security parameters rather that climate change/carbon emission parameters.

## 1.4 Contribution to Existing Knowledge

This research contributes to existing knowledge on energy security for the EU in the following innovative ways:-

A. By establishing that a binding obligation to future generations to create alternative energy sources has a strong theoretical basis. Such support can be found in theories such as aspects of the social contract theory, Rawls' theory of justice and the concept of sustainable development, which are used to provide

[26] Hartmut Bossel, *Indicators for Sustainable Development*. (1999) A Report to the Balaton Group. International Institute for Sustainable Development.

an appropriate theoretical/conceptual framework for this research. While most of the efforts to ensure a sustainable future have been based on climate change considerations, this research re-appraises the concept of sustainable development, which has traditionally been associated with climate change/carbon emission reduction obligations. The World Commission on Environment and Development, in describing the concept of sustainable development, stated that it symbolized a process of change so that the natural resource base on which present and future generations depend on for survival is not eroded.[27] This research therefore links the concept to the ensuring of energy security for present and future generations.

B. By establishing how the evolving legal framework for the development of renewable energy technologies ensures economic, environmental and social development in line with the new definition of energy security.

C. By establishing the need for a new legal framework dedicated to renewable energy technologies in view of the defects in the existing legal framework.

## 1.5 Sustainable Development as a Conceptual Framework

For societies to attain sustainable development, considerable effort must be put into the development of renewable energy sources to ensure sustainability in energy policy. This is because energy is at the centre of the sustainable development paradigm, and few activities affect the environment as much as our use of energy.[28] The concept of sustainable development has been utilized as a conceptual framework for the research. This is important as sustainable development is the foundational premise of

[27] World Commission on Environment and Development, *Our Common Future* (1987) 46.
[28] Anna Stanford, '*A Vision of a Sustainable Energy Future*' (1997) Vol. 10 No. 2/3 Renewable Energy, 417-422, at 418.

international energy and environmental law.[29] From this premise, the concept is viewed as a modern reflection of the theories examined in chapter two which back up the duty of the present generation to future generations to preserve energy sources for development. The research therefore examines in chapters five to seven how the legal framework for the development of renewable energy technologies ensure economic, social and environmental development. This provides an analysis of how these technologies are vital to the achievement of sustainable development goals for present and future generations.

The management of natural resources will be closely linked to the nuanced conceptualizations of sustainable development. The development of a sustainable energy legal framework is linked to the principle of sustainable development. It will be shown that, through the utilization of legal tools, renewable energy technologies can ensure economic, social and environmental development – which are the three main arms of the concept of sustainable development.

This approach will assist in determining the questions that will be raised, such as:-

1. Are there inter-generational responsibilities on the part of the present generation for the benefit of future generations?

2. Can the legal framework for the development of renewable energy technologies ensure economic, environmental and social development in the EU?

3. Has the law, as it presently stands, done all that it can possibly do to address the issues of energy security?

4. What roles do renewable energy technologies have to play in the quest to ensure energy security for present and future generations?

5. Can the challenges facing energy security be tackled solely through renewable energy technologies?

[29] Lakshman Guruswamy, *Energy Justice and Sustainable Development* (2010) 21 Colorado Journal of International Environmental Law and Policy 231.

6. Can the development of renewable energy technologies be possible solely through market forces without a need for a legal framework? In other words, do market forces need the tool of the law to adequately ensure the protection of investments in renewable energy technologies?

There is an analysis of the perceived unfavourable effects of efforts to ensure economic, social and environmental development through renewable energy technologies to determine whether the end justifies the means. For instance, energy obtained from a wind farm technology will ensure sustainable consumption of energy. But, ironically, this apparent solution to one of the problems of unsustainable development comes with some environmental challenges. For example, in the United Kingdom today, there is a measure of opposition to wind energy technology due to environmental issues such as noise, landscaping and visual impact issues. This sort of reflexivity enables a broader theoretical and conceptual clarification of concepts like sustainable development and their relevance to issues such as the focus of this research – an evolving legal framework.[30]

Also, government subsidies given to manufacturers to aid renewable energy projects are a step towards sustainability, but they also impinge on the rights of the people to cheap and competitive energy (discussed further in Chapter Seven) in view of the internalization of external environmental costs. This is because the costs of financing these subsidies, which governments imposed on conventional energy suppliers, are eventually passed on to the final consumers, leading to increase in energy bills. The resultant effect is energy poverty among the lower rung of the social ladder. Sustainable development can therefore be said to involve trade-offs among its environmental, social and economic components which cannot be resolved simultaneously.[31] This methodological analysis will however reveal that, despite the perceived challenges and

[30] Heidi Rap Nilsen, '*The Joint Discourse "Reflexive Sustainable Development." – From Weak towards Strong Sustainable Development'* (2010) 69 Ecological Economics, 495-501 at p. 496.

[31] Cornelissen A.M.G. et al. *Assessment of the Contribution of Sustainability Indicators to Sustainable Development: A Novel Approach using Fuzzy Set Theory*. (2001) Vol. 86 Issue 2, Agriculture, Ecosystems and Environment 173-185 at 174.

seeming negative consequences of renewable energy technologies, they still present the best alternative for a sustainable future. The cost to be incurred today can certainly not be compared to the immense benefits that will be obtained from ensuring that sustainable measures are put in place for present and future generations.

## 1.6 Why the EU?

The focus is on the European Union (EU) and the evolving legal framework on the development of renewable energy technologies. There is also an examination of how existing and prospective legal instruments can be made to be more innovative on the issue of renewable energy technologies as a means to a desired end. A brief discussion below on the situation at the international, regional and local levels reflects the precarious situation in which the EU has found itself on the issue of energy security, and hence the reason for the focus on the region. Under the EU 2015 Energy Union Package,[32] while referring to latest data, it was observed that the EU imported 53% of its energy at a cost of around EUR400billion, making it the largest energy importer in the world. This is becoming unsustainable even as the region increasingly becomes exposed to the vagaries of the energy supply market.

### 1.6.1 Situation at the International Level

There is currently no rule of international law which creates legal obligations relating to unsustainable consumption of energy, just as the United Nations Framework Convention on Climate Change (UNFCCC)/Kyoto Protocol and the Convention on Biological Diversity (CBD) which purport to create obligations in the area of climate change and protection of biodiversity respectively. Calls for an international instrument at the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg did

[32] COM(2015) 80 final.

not lead to anything.[33] The Plan of Implementation reiterated the need for appropriate legal and regulatory frameworks.[34] It is argued, therefore, that the time has come for an effective legal framework in the EU that ensures sustainability in energy production and consumption.

What the law has done (at the domestic level) is to use economic tools like taxation and feed-in-tariffs to directly or indirectly discourage unsustainable consumption by making renewable energy sources attractive to consumers. 'Soft laws' have also been utilized, which have helped in part to establish sustainable development as a legal principle. For instance, the preamble to the Marrakesh Agreement establishing the WTO reiterates the need for parties to allow for the optimal use of world resources in trade relations in accordance with the objective of sustainable development. Such optimal use may be better enforced through legal instruments which are largely absent at the international level.

The time has however come to utilise 'hard laws' to aid in ensuring sustainable energy within the EU. Solomon and Krishna observed that, even if a strong and binding agreement is reached on greenhouse gas reduction (which is looking very likely with the implementation of the December 2015 Paris Climate Change Agreement), a supplemental international treaty on energy efficiency will still be needed to compel the required changes.[35] What is being stated here, and which is looked at in detail in chapter eight, is that there is a need to develop separate laws governing energy production and consumption different from the laws in the realm of climate change which have become inadequate in ensuring sustainability in energy consumption.

While it is almost practically impossible to codify the law on sustainable development, a helpful way out at last can be seen in the development of the law on energy consumption. If the law is developed, the problem may be half-solved. The Energy

[33] Christina Voigt, *Sustainable Development as a Principle of International Law: Resolving Conflicts between Climate Measures and WTO Laws*.( Martinus Nijhoff Publishers 2009) 28.

[34] Doc. UN A/Conf. 199/CRP7). World Summit on Sustainable Development: Plan of Implementation http://www.unric.org/html//german//entwicklung/johannesburg/ accessed on 23rd March 2013

[35] Barry D. Solomon and Karthik Krishna, '*The Coming Sustainable Energy Transition: History, Strategies and* Outlook' (2011) 39 Energy Policy 7422-7431 at 7429.

Charter Treaty (ECT) and the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects[36] may be useful starting points for evolution of EU Law on sustainable energy consumption in view of the fact that most of the member states of the ECT are in Europe. Article 2 of the ECT, states the purpose of the treaty as follows:

> "This Treaty establishes a legal framework in order to promote long-term cooperation in the energy field, based on complementarities and mutual benefits…"

Also, the Energy Charter Protocol on Energy Efficiency contains provisions for promotion of energy efficiency which can form the basis for codification of the law on sustainable energy consumption. The EU may also borrow a leaf from the ASEAN Agreement on the Conservation of Nature and Natural Resources.[37] But the most important of them all may be the draft International Covenant on Environment and Development, discussed in chapter nine. It is a useful starting point for efforts to develop the legal framework on sustainable energy consumption. It is a product of efforts between the International Union for Conservation of Nature and the International Council on Environmental Law.[38]

What the world needs is more than a mere declaratory document like the Earth Charter and other similar documents. Development of a legal framework on sustainable energy production and consumption will be the first step in realizing the dream of the former secretary-general of the United Nations who advocated the need for a covenant between man and nature when he said:

> The character of the United Nations governs relations between states. The Universal Declaration of Human Rights pertains to relations between the

[36] 2080 UNTS 95; 34 ILM 360 (1985)
[37] Adopted in Kuala Lumpur on 9th July, 1985.
[38] http://www.iucn.org/about accessed on 23rd March 2013

> state and the individual. The time has come to devise a covenant regulating relations between humankind and nature.[39]

Furthermore, most of the laws passed at the international, regional and national levels such as the United Nations Framework Convention on Climate Change (UNFCCC)[40] and the Kyoto Protocol focus mostly on combating climate change and appear to be mere statements of intention. As such, there are no equivalent instruments to combat sustainability in energy consumption and ensure a reserve of capital for present and future generations. Furthermore, most of the legal instruments existing at the international level such as those mentioned above are in the form of soft law, lacking the legally binding force of instruments such as the Montreal Protocol on Substances that deplete the Ozone Layer.[41]

Even the ECT, which is an international energy investment protection treaty, is more focused on the protection of investments in energy sector,[42] with the required provisions dedicated solely to renewable energy technologies lacking. The treaty will be examined later in chapter eight. In essence, most efforts to ensure energy security at the international level can be said to have been devoted towards ensuring secure sources of energy generally, with the emphasis being placed on conventional energy sources.

### 1.6.2 Situation at the EU Level

The EU, focus of this research, appeared to have taken leadership of environmental issues since the early 1980s due to the unwillingness of the United States, then under President Ronald Reagan, to follow through earlier recommendations of President

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[39] Report of the Secretary-General on the Work of the Organization , UN GAOR, 45th Sess. Supp. No. 1 at 11. U.N. Doc. A/45/1 (1991). http://daccess-dds--ny.un.org/doc/UNDOC/GEN/N91/400//75//IMG/N9140075.pdf?OpenElement accessed on 25th March 2013

[40] 1771 UNTS 107.

[41] 1522 UNTS 3; 26 ILM 1550 (1987).

[42] Andrei Konoplyanik, '*Energy Security and the Development of International Energy Markets.*. Appearing in Barry Barton *et al* (eds.), *Energy Security: Managing Risk in a Dynamic Legal and Regulatory Environment*' (Oxford University Press, 2004) 47.

Jimmy Carter on energy issues.[43] Furthermore, in view of the precarious position the EU has found itself in terms of grossly inadequate conventional energy reserves in the face of rising demand, it has become pertinent for the region to take its fate into its hands. America and Russia still have considerable levels of conventional energy reserves and, as such, may not be too keen on taking the lead in the investments in renewable energy sources. This has manifested itself in the lukewarm attitude of Canada and the United States to major international conventions on the environment. The recent discovery of shale gas in commercial quantities in that part of the world has further compounded matters.[44] The EU is energy-deficient and relies on sources outside the region for a large percentage of its supplies.[45]

As the EU becomes increasingly reliant on external sources of supply of conventional energy sources, it is clear that the appreciable level of reserves discovered in other parts of the world does not bring much comfort to Europe. Transition to an economy in the EU increasingly powered in part by renewable energy calls for a long-term and broad-ranging thinking on energy policy that can only be put in place by the EU, as regional action would influence global and regional market developments needed to boost the energy market more effectively than action by individual member states.[46] Energy sources are regarded as global resources and at best regional standards for increasing sustainability measures and development of substitutes should apply[47] since international laws are absent.

Also, some of the existing laws at the EU level are in the form of hard laws and they enjoy some measure of enforcement and adherence by member states. The EU already has a host of legally binding instruments on climate change which can be adapted to

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[43] David Biello, '*Where did the Carter White House's Solar Panels Go?*' The Scientific American (August 6, 2010). http://www.scientificamerican.com/article/carter-white-house-solar-panel-array/. Accessed on 2 March 2014.

[44] Gregory Zuckerman, '*Breakthrough: The Accidental Discovery that Revolutionized American Energy*' The Atlantic of November 6, 2013. http://www.theatlantic.com/business/archive/2013/11/breakthrough-the-accidental-discovery-that-revolutionized-american-energy. Accessed on 3 March, 2014.

[45] Communication from the Commission to the Council and the European Parliament: European Energy Security Strategy (COM (2014) 330 Final). Available at http://ec.europa.eu/energy/doc/20140528_energy_security_study.pdf. Accessed on 13 December, 2014.

[46] Helen Donoghue, '*Europe's Energy Policy: Creating Change*' (2007) 31 Fletcher F. World Aff. 165 at 166.

[47] Roefie Hueting and Lucas Reijnders, '*Sustainability is an Objective Concept*' (1998) 27(2) Ecological Economics 139-147.

sustainable energy policy issues. A focus on the EU with its well-grounded laws on climate change is therefore appropriate to develop binding rules on sustainability in energy consumption. For instance, the EU, through its Third Energy Package, seeks to liberalize the energy market within the region to encourage cross-border trade and competition.[48] Member states like the United Kingdom's though its Offshore Wind Development Programme could benefit from the provisions of the Third Energy Package to export their wind energy potentials to the rest of Europe.[49] The Package mirrors the provisions of Article 6 of the Energy Charter Treaty (to which most European countries are signatories) by providing for the elimination of market distortions and barriers to competition in economic activity in the energy sector.

Energy costs are rising in the EU and there is a risk of multinational energy intensive companies moving away to other regions of the world like the United States of America where shale gas has forced down energy costs. The European Council at its meeting held in Brussels on May 22, 2013, listed three main areas to be focused upon:[50]

- Completion of the internal energy market
- Investments in new technologies with funding coming from the market
- Energy efficiency

Behrens observed that, after decades of hesitation, there is now agreement that the objectives of energy security, environmental sustainability and economic competitiveness, which are key parts of EU energy policy, can be better achieved at the EU level due to increasing globalisation, market liberalisation, environmental pressures, technological challenges, and the growing dependence on imports from outside the

[48] http://www.ofgem.gov.uk/Europe/ThirdPackage/Pages/ThirdPackage.aspx accessed on 10th March 2013
[49] UK Offshore Wind Report 2012 http://www.thecrownestate.co.uk accessed on 10th March 2013
[50] Raluca Dirjan (2013). *Energy Prices and Lack of Competitiveness High on the Agenda of the European Council*. Schoenherr Attorneys at Law. (2013) <http://www.mondaq.com/x/243012/Energy+Law> Full report on deliberations of the Council available at http://ec.europa.eu/energy/council/2013_en.htm accessed on 12th March 2013.

EU.[51] Furthermore, in a House of Lords Committee Report entitled, 'No Country is an Energy Island: Securing Investment for the EU's Future, it was stated as follows:[52]

> No Country is an Energy Island. There are therefore clear benefits to be derived from working with the EU on the energy challenge. There is however a dilemma. It is for each Member State to decide what mix of energy is the most appropriate for them. But the choices of one country affect others, including the collective need for energy security, an efficient market and environmental improvement, and so the European Commission should have a role in monitoring choices and their impacts

### 1.6.3 Situation at the National (Local) Level

At the 2002 World Summit on Sustainable Development in Johannesburg, South Africa, it was declared that, to achieve the goals of sustainable development, effective international and multilateral institutions would be needed.[53] This may be because international law on sustainable development is different from traditional environmental law which may be accustomed to traditional state or regional boundaries. It may therefore be said that sustainable development issues – inclusive of climate change and energy security issues – can only be effectively tackled at a higher level for there to be appreciable effect. Halvorssen observed that climate change and the more recent threats to the natural life support systems have heightened the focus on international cooperation, sustainable development, and further limits to state sovereignty in order to solve these global problems.[54] In view of the absence of relevant laws at the

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[51] Arno Behrens, '*The Role of Renewables in the Interaction between Climate Change Policy and Energy Security in Europe*' (2010) Renewable Energy L. & Pol'y Rev. 5.

[52] House of Lords European Union Committee 14th Report of Session 2012-13 http://www.publications.parliament.uk/pa/id201213/idselect/ideucom/161/161/161.pdf accessed on 16 September 2013.

[53] Report of the World Summit on Sustainable Development. Article 31, Resolution 1 Available at http://www.unmillenniumproject.org/documents/131302_wssd_report_reissued.pdf accessed on March 7 2013.

[54] Anita M. Halvorssen, '*International Law and Sustainable Development – Tools for Addressing Climate Change*' (2010-2011) 39 Denv. J. Int'l L. & Pol'y 397.

international level mentioned above, the most appropriate level to treat issue of sustainability is at the EU level.

Also, the EU is better placed to handle issues of energy security, chief of which is the investment in renewable energy technologies as efforts towards sustainable energy at national levels seem to have been half-hearted and uncoordinated[55]. O'Riordan and Voisey rightly observed as follows:[56]

> "The ultimate barrier to sustainability lies in the lack of encouragement from the top namely the Prime Minister or President, the unwillingness of the main economic departments (finance, industry, employment, energy, transport) to address sustainable development within the mainstream economics tools, and the relative political weakness of the environment ministries."

Furthermore, collaboration has been a major feature in the growth of most developed countries, as exemplified in the creation of agencies such as the Organisation for Economic Cooperation and Development (OECD), The International Energy Agency and the signing of treaties such as the ECT and its Protocol on Energy Efficiency and Related Environmental Aspects.[57] As such, cooperative efforts coordinated by the EU on this issue are the most appropriate. Also, although it may be argued that energy issues should be handled at the national level in view of the principle of subsidiarity, the element of comparative advantage prevalent in most alternative energy sources, associated variability issues and the fact that such energy sources require alternative areas of energy collection, necessitate the need for action at the regional level.

For instance, there may be supply problems due to supply fluctuations at the national level as occurred in Brazil in 2003 when a heat wave dried up hydro power sources,

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[55] Timothy O' Riordan, '*The Politics of Agenda 21*' In Timothy O' Riordan and Heather Voisey, *The Transition to Sustainability: The Politics of Agenda 21 in Europe*. (Earthscan Publications Ltd 1998).
[56] Ibid 47-48.
[57]. 2080 UNTS 95; 34 ILM 360 (1985).

leading to massive power cuts.[58] There is therefore a need for collaboration at the EU level to enable each member state tap into the vast array of renewable sources available in other states, and transmitted through the central regional grid.

## 1.7 Sustainability and Energy Utilisation

Dincer and Rosen analyzed the relationship between sustainable development and energy from two angles[59] :-

- Sustainable development requires a supply of energy resources that is readily and sustainably available over a long period, at reasonable cost and without negative societal impacts. (issues which are analyzed in chapters five to seven).

- Sustainable development requires that energy resources should be used as efficiently as possible.

The first angle epitomises the focus of this research, which is to show how the evolving legal framework for the development renewable energy technologies ensures economic, environmental and social development in the drive towards sustainability. In doing this, the relationship between renewable energy technologies and the three dimensions of the concept of sustainable development and how a legal framework is evolving within the systems is shown. The review in 1997 of progress since the Rio Earth Summit of 1992 realised the critical role of energy by placing it on the agenda of the Commission

[58] Marc Ringel, '*Fostering the use of Renewable Energies in the European Union: The Race between Feed-in-Tariffs and Green Certificates*' (2006) 31 Renewable Energy 1 at 3.
[59] Ibrahim Dincer and Marc A. Rosen, '*Energy, Environment and Sustainable Development*' (1999) 64 Applied Energy 427-440 at 437.

on Sustainable Development at its 9th session held on 16th-27th April, 2001.[60] Article 4 of Agenda 21[61] provides as follows:

> One of the most serious problems now facing the planet is that associated with historical patterns of unsustainable consumption, and production, particularly in the industrialised countries." Social research and policy should bring forward new concepts of status and lifestyles which are "less dependent on the Earth's finite resources and more in harmony with its carrying capacity." Greater efficiency in the use of energy and resources-- for example, reducing wasteful packaging of products-- must be sought by new technology and new social values.

Energy is inextricably linked with sustainable development because of the fundamental role it plays in world development.[62] In other words, energy is the foundational basis for any development activity. A cost-effective and stable energy supply is the prerequisite for social and economic development and is fundamental to the concept of sustainable development.[63] In a 2010 EU Green Paper entitled 'EU Development Policy in Support of Inclusive Growth and Sustainable Development, Increasing the Impact of EU Development Policy, it was observed that out of the many challenges of sustainable development, access to sustainable energy for all citizens is a key issue.[64]

## 1.8 Layout of the Thesis

The research illustrates the practical application of legal tools towards efforts at achieving sustainability in energy production and consumption in the EU with emphasis

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[60] Randall Spalding-Fecher, Harald Winkler and Stanford Mwakasonda, '*Energy and the Word Summit on Sustainable Development: What Next?*' (2005) 33 Energy Policy 99-112 at p102.

[61] U.N. GAOR, 46th Session. Agenda 21, UN Document A/Conf. 151/26 (1992).

[62] Francois Marechal, Daniel Favrat and Eberhard Jochem, '*Energy in the Perspective of Sustainable Development: The 2000W Society Challenge*' (2005) 44 Resources Conservation and Recycling 245-262.

[63] Adnan Midilli, Ibrahim Dincer and Murat Ay, '*Green Energy Strategies for Sustainable Development*' (2006) 34 Energy Policy, 3623-3633 at 3624.

[64] COM(2010) 629 final http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0629:FIN:EN:PDF accessed on 22 March 2013

on renewable energy technologies. This is in recognition of the fact that there may be a legal obligation on the part of the present generation towards future generations to ensure sustainability in energy production and consumption. These legal tools are a major way of carrying out this obligation. The concept of sustainable development provides a conceptual framework for the research, which is based on theories that are examined in chapter two. This thesis does not dwell on the controversies surrounding an appropriate definition of the concept, but adopts the definition of the concept given by the Brundtland Commission – sustainable development means 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'[65]

This definition encapsulates the philosophical underpinnings of this thesis – the duty of care owed by the present generation to future generations. This duty propels man to strive to preserve the human race, especially through the development of science to combat the challenges of nature such as illnesses. Hulse observed that, throughout humanity's recorded existence, development has always been about survival.[66] Brundtland, in her report, argued that sustainable development requires the promotion of values that encourage consumption patterns that are within the bounds of the ecologically possible.[67] This is relevant to sustainable energy production and consumption. The United Kingdom Environmental Law Association, borrowing a leaf from the Brundtland Commission, defined the concept of sustainable development as:

> the use, development, and protection of all natural and physical resources in a way, and at a rate which enables communities and individuals, now and in the future, to provide for their social, cultural and economic well-being…

[65] Report of the World Commission on Environment and Development. Available at www.un-documents.net/wced-ocf.htm accessed on 23rd March 2013.
[66] Joseph H. Hulse, *Sustainable Development at Risk: Ignoring the Past* Cambridge University Press India PVT Ltd 2007) 15.
[67] Susan Baker *et. al*. eds, *The Politics of Sustainable Development: Theory, Politics and Practice within the European Union*. (Routledge 1997).

Chapter Two analyses the different theories that support the obligation to future generations, in addition to the concept of sustainable development to establish a firm theoretical/philosophical and conceptual foundation for the thesis. Brundtland's definition of sustainable development raises the twin issues of inter and intra-generational equity, which create a duty in mankind to ensure equitable access to energy for present and future generations.

Chapter Three examines the evolution of the obligation identified in chapter two into a legal obligation. It also examines the concept of sustainable development as a legal principle. It looks at the evolution of the concept and determines whether the obligation to future generations has reached the status of a legal principle enforceable in the law courts. It will be pointed out that the concept is a normative concept that is made up of legal principles, and that these principles need an umbrella concept provided by sustainable development to function. These legal principles are strong enough to form the bedrock of an effective legal framework for the development of renewable energy technologies.

Chapter Four examines current EU energy legal framework and the moves that have been made to ensure sustainability in energy production and consumption within the EU. It is however shown that the current legal framework has not given adequate attention to renewable energy technologies, with conventional energy sources still enjoying more of support at both the national and regional levels.

Chapters Five to Seven look at the evolution of a legal framework that supports renewable energy technologies within the systems that make up the concept of sustainable development – the economic, social and environmental systems – which together make up the 'triple bottom line.' The chapters highlight how the evolving legal framework impact on the drive towards ensuring sustainability in energy production and consumption within the EU. A thorough analysis in the three chapters reveals that economic, social and environmental development can be achieved through the utilisation of renewable energy technologies. In other words, an evolving legal

framework within the systems ensures that the obligation to future generations is carried out.

Chapter Eight examines the existing laws on sustainable energy technologies within the EU and their importance to the drive to ensure sustainability within the region. In examining them, the centrality of the role of the law will be highlighted. It is argued that there is a symbiotic relationship between these technologies and the law which cannot be overemphasized. The main argument is that the existing legal framework as it stands is grossly deficient and needs a transition to one that projects a determination by the present generation to act in protecting its interest and that of future generations.

Chapter Nine looks at the Draft Covenant on Environment and Development of the International Union for Conservation of Nature as a possible starting point for hard laws on sustainability in energy consumption. This is in view of the perceived deficiencies of the existing laws examined in chapter eight. Chapter Ten concludes this thesis and also offers suggestions for the future. Solomon *et al* stated that, while there is much ground for pessimism in accomplishing a rapid transition to sustainable energy, direct regulation and mandates appear to be the most effective.[68] Borrowing from this observation, the conclusion is that there is a need for a more effective legal framework dedicated to the development of renewable energy technologies.

[68] Barry D. Solomon and Karthik Krishna, '*The Coming Sustainable Energy Transition: Histories, Strategies and Outlook*' (2011) Vol 39 Issue 11 Energy Policy 7422-7431 at p. 7428.

# CHAPTER TWO

# THEORETICAL-CONCEPTUAL FRAMEWORK: A BASIS FOR THE OBLIGATION TO FUTURE GENERATIONS

## 2.1 Introduction

Energy security has become a fundamental issue in the current drive by the international community towards sustainable development. This chapter looks at the philosophical underpinnings of this research which are centred on the duty to preserve energy resources for present and future generations for their development. This duty can be encapsulated in theories and concepts such as aspects of the social contract theory, Rawls' theory of justice and the concept of sustainable development. In other words, these theories and the concept can be said to underlie the obligation of the present generation to ensure that adequate reserves of both conventional and renewable energy sources are left behind for future generations, with the present generation equally benefitting in the process. This obligation follows different phases, commencing from aspects of the social contract theory and culminating in the concept of sustainable development.

By developing a sustainable energy legal framework for the EU through renewable energy technologies, the present generation may be said to be fulfilling its obligation to future generations to ensure a foundation for future development is laid. The aim in this chapter is to establish how this obligation can be traced to theoretical foundations. It will be established how this obligation towards future generations is rooted in what is termed here a 'theory of obligation', which may be traced to aspects of the social contract theory, Rawls' theory of justice, and the concept of sustainable development. The linkages between these theories and the concept are shown. Also, some of the principles that make up the concept of sustainable development will be examined to show their connection to this theory of obligation.

It is stated in the chapter that the concept of sustainable development (which is the conceptual framework for this research) is a modern version of these theories. This chapter also seeks to look beyond the ideological divide between anthropocentrism and ecocentrism as basis for the concept of sustainable development and finds a unifying front in the ecological modernization theory. It will be shown that the concept of sustainable development, as it stands, appears to be premised on the concept of environmentalism within the context of socio-economic advancement. It queries the conventional model of development which is viewed as a threat to future existence. The clear message is that the journey towards preserving that future starts from now.

## 2.2 Relevant Aspects of the Social Contract Theory

Ethical duties to future generations are grounded in part on a social contract theory espoused by thinkers such as John Locke, Immanuel Kant and, most recently, John Rawls.[69] According to aspects of the theory relevant to this research, all humans share a social contract by virtue of being members of the same species and sharing the same interests and resources.[70] Gardiner identified two strands of the contract theory.[71] The first strand is based on the works of Thomas Hobbes, and later David Gauthier. It holds that persons are primarily self-interested and that a rational assessment of the best strategy for attaining the maximization of their self-interest will lead them to act morally (where the moral norms are determined by the maximization of joint interest) and to consent to governmental authority.[72] The second strand is based on the works of Immanuel Kant, and later John Rawls and T.M. Scanlon.[73] It holds that rationality requires that we respect persons (here both present and future generations), which in turn requires that moral principles (referred to under the first strand) be such that they can be justified to each person (i.e. justified to both present and future generations).

[69] Kristin Shrader-Frechette, *Duties to Future Generations, Proxy Consent, Intra - and Intergenerational Equity: The Case of Nuclear Waste* (2000) Vol. 20 No. 6 Risk Analysis 771 at 772.
[70] Ibid.
[71] Stephen M. Gardiner, *A Contract on Future Generations*. (2009) http://www.academia.edu/2034456/A_Contract_on_future_Generations at 2-3 accessed on 5 April, 2013.
[72] Ibid.
[73] Ibid.

Thus, individuals are not taken to be motivated by self-interest but rather by a commitment to publicly justify the standards of morality to which each will be held.[74]

The difference between the two strands of the social contract theory lies in the words 'self-interest'. The earlier strand of the theory propounded by the likes of Hobbes was based on the giving up of rights to the state for the greater benefit of all interested parties. It was more or less underlined by utilitarian considerations. The second strand of the theory is the focal point of this research. It is based on the rejection of self-interest and the making of sacrifices for the benefit of future generations. It is the second strand of the social contract theory that is relevant to the theory of obligation to future generations.

It may be said that the social contract theory is as old as human evolution. It is rooted in the inclinations of man for self-preservation.[75] It later evolved into several versions, especially during the age of enlightenment. It must however be pointed out that the conflicts in different interpretations of the theory will not be examined in detail here. The focus will rather be on the evolution of the theory and its relevance to the issue of sustainability in energy consumption. Hobbes constructed the theory on the concept of natural right to self-preservation. This research purports to extend self-preservation to a situation where individuals in a society have agreed to make sacrifices by giving up some of their rights for a better future and for the protection of others and future generations and the general preservation of the human race.[76] Without such sacrifices being made, society may degenerate back into a state of nature and subsequently cease to exist, putting future generations in extreme danger. Therefore, the first step in the evolution of the social contract is the renunciation by the present generation of some of its liberties for a better future.[77] The consolation here is that when such rights are renounced, there are general benefits accruable to both the present and future generations. The second step requires a medium for enforcement of the contract, and that is where the law comes in.

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[74] Ibid.
[75] Max Atkinson, *Hobbes, Locke and Rousseau in Los Angeles: A Reply* (1992) 17 Alternative L.J. 216.
[76] John W. Gough, *The Social Contract* (Oxford Clarendon Press, 1936) 2-3.
[77] Celeste Friend, *Social Contract Theory* (2004) International Encyclopedia of Philosophy.

It may be stated here that Hobbes' idea of the social contract theory is centred around the need to master or conquer nature in order to have a 'refined society' devoid of the solitary, nasty and brutish' state of nature. This has led to the subjugation of nature for the benefit of man. What the social contract did prior to the Rousseau era was to substitute one nasty state for another, and must have caused the discontent that led to the French revolution. The 'nasty state' existing before Rousseau involved the subjugation of nature on the alter of development. It must however be said that the social contract is evolving. It started based on the idea that people gave up their rights to the state for a better society. John Locke suggested that the state is needed to enforce the provisions of the social contract.[78] However, the state needs the instrumentality of the law to enforce its terms. It is the law that enables society to evolve from the brutish state into a civil society. In essence, what the law simply does is to ensure a higher level of enforcement of the social contract, based on a respect for and placing value on nature. Binmore supports this assertion when he stated that, in carrying out their part in sustaining a social contract, the citizens of a society need rules to regulate their conduct.[79]

Rousseau seems to disagree with Hobbes' idea of substituting the new era of subjugation of nature for the former nasty and brutish state of nature. He stated that, instead of corrupting people's inherent goodness, civil society enhances the best human qualities and enables its citizens to live lives of greater moral purpose and significance.[80] As such, man's attitude towards nature should be that of benevolence and not that of a conqueror. Rousseau has improved upon Hobbes' idea of basing the social contract theory on self-preservation. Self-preservation in essence means, not just the preservation of the present but also future generations of the human race. Rousseau stated that:[81]

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[78] John Locke, *Second Treatise of Government* (J. Gough ed., 1976).

[79] Ken Binmore, *Game Theory and the Social Contract: Just Playing* (Massachusetts Institute of Technology, 1998) 5.

[80] Christopher D. Wraight, *Rousseau's The Social Contract* (Continuum, 2008) 41.

[81] Jean Jacques Rousseau, *The Social Contract: Vol 38. Great Books of the Western World* (J.D.H. Cole, Trans). Chicago: Encyclopedia Britannica, 1952). Original Works Published in 1762.

> What man loses by the social contract is his natural liberty and an unlimited right to everything he tries to get and succeeds in getting; what he gains is civil liberty and the proprietorship of all he possesses (emphasis mine)

In essence, self-preservation requires the present generation to give up some of its libeties in order for future generations to get entitled to development. Proprietorship here is being interpreted to mean a sort of agency or trust position by which the present generation is entrusted with the judicious utilisation of energy resources for the benefit of both present and future generations. In analysing Rousseau's works, Mahoney *et al* observed that Rousseau warned against the amoral world of the "rights of appetite" because such a world is not worth living in over the short term and is unsustainable in the long term.[82] Locke seemed to be in support of this warning when he stated that man could take from nature, mix one's labour with the taking and claim the result as one's private property so long as one leaves as much and as good for others.[83]

In preserving the future of the society, its members have an obligation to maximize the welfare of the least well off through a rational production and consumption of energy resources.[84] The least well off here could be applicable to future generations. In view of the disadvantaged position of future generations, the present generation is responsible to them for the stewardship of the 'common heritage' including natural resources like energy resources under the social contract.[85] In essence, under this social contract, the present generation has duties while future generations have rights. While this may seem unusual, however, the justification for such rights and duties is to be found by regarding them as if they were contractual, and by showing the rationality of this contractual base.[86] In trying to show this rationality, Gaba justified this social contract by

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[82] Joseph T. Mahoney, Anne S. Huff and James O. Huff, *Toward a New Social Contract Theory in Organization Science* (1994) Vol. 3 No. 2 Journal of Management Inquiry 153-168 at 159.

[83] Ernest Partridge, *Future Generations*. Appearing in Dale Jamieson (ed.), *A Companion to Environmental Philosophy* (Blackwell Publishers Ltd., 2001) 386.

[84] Elisha A. Pazner and David Schmeidler, *Social Contract Theory and Ordinal Distributive Equity* (1976) 5 Journal of Public Economics 261-268.

[85] Promod Nair, *Our Obligations towards Posterity – Philosophy and International Law* (1999) 11 Student Advoc. 1 at 6.

[86] David Gauthier, *The Social Contract as Ideology* (1977) Vol. 6 No. 2 Philosophy and Public Affairs 135.

stating that (even though future generations cannot be identified now), the present generation can actually identify their inherent interests.[87] Their inherent and undeniable interest in development necessitates the need for a protection of such an interest.

Adams seems to paint a graphic picture of this contractual base when he referred to the present generation as those being in the 'original position.'[88] He stated that:

> In the original position, representative individuals…. might be born early in the history of the world when environmental conditions are good and natural resources are plenty…. Those in the original position must decide, therefore, the minimum access to natural resources and environmental conditions necessary for every generation to agree to a social contract

The idea of the 'original position' (discussed earlier by John Rawls) puts the present generation in a position of advantage, necessitating the need for duties under the social contract to be vested in it while the rights are vested in future generations. English observed that, ordinarily, the self-interested individuals in the 'original position' would choose not to save future generations.[89] Therefore, the only way future generations can be saved is by the imposition of legal duties on the present generation in favour of future generations. However, the idea of the 'original position' brings in a premise of equality into the social contract, which Burke will rather call a partnership.[90] He observed that:[91]

> As the ends of such a partnership cannot be obtained in many generations, it becomes a partnership, not only between those who are

[87] Jeffrey M. Gaba, *Environmental Ethics and Our Moral Relationship to Future Generations: Future Rights and Present Virtue*. (1999) 24 Colum. J. Envtl. L. 249 at 257

[88] Todd B. Adams, *Rawls' Theory of Justice and International Environmental Law: A Philosophical Perspective* (2007) 20 Pac. McGeorge Global Bus. & Dev. L.J. 1 at 3.

[89] Jane English, *Justice Between Generations*. (1997) Vol. 31 Issue 2, Philosophical Studies 91-104 at 92.

[90] Edmund Burke, *Reflections on the Revolution in France*. (London: Dent, 1910).

[91] Ibid.

> living, but between those who are living, those who are dead, and those who are to be born.

Future generations have rights to enforcement of the contract even though it is not written. McAffee observed that the rights under the contract appear to be guaranteed by a fundamental law that exists outside the written constitution of the land because they are natural rights that individuals retain when they enter into civil society.[92] Rosenfeld suggested that the social contract should be based on a 'proper' equilibrium between individual autonomy and social cooperation, thereby ensuring a freedom to enter into such a contract on the part of the society.[93] What can be gathered from his observation is that there must be a proper balance between the free will to enter into the social contract and the need to take into consideration the collective interest of the larger society before the contract can be established. The latter aspect requires the giving up of some rights and the taking up of some duties. Nevertheless, the social contract can still be said to have been voluntarily and freely entered into.

The social contract theory is therefore based on the principle of consent on the part of members of the society.[94] However, this unanimous consent is inferred and may be likened to the constitution of a country which usually starts with the phrase: "We the People…." It is assumed that all the citizens of the state have agreed to be bound by the terms of the constitution, even though there is no express act to validate this. If we have to give room for each individual to have a say in the terms of the social contract, there might never be one, as each individual's idea of what is just may vary. The social contract is a response to this possible dilemma as it is based on compromises or sacrifices on the part of each and every member of the society.[95] There is no perfect contract as such at the level of the society. Such 'perfect contracts' are rather limited to

[92] Thomas B. McAffee, *The Bill of Rights, Social Contract Theory, and the Rights "Retained" by the People* (1991-1992) 16 S. 111 U.L.J. 267.
[93] Michel Rosenfeld, *Contract and Justice: The Relation Between Classical Contract Law and Social Contract Theory* (1984-1985) 70 Iowa L. Rev. 769 at 772.
[94] Edward A. Harris, *From Social Contract to Hypothetical Agreement: Consent and the Obligation to Obey the Law* (1992) 92 Colum. L. Rev. 651 at 666.
[95] Gerald Gaus, *Social Contract and Social Choice* (2011-2013) 43 Rutgers L.J. 243 at 268.

private contracts between individuals or corporate entities. Hardin observed that unanimity is an impossible condition for a working constitution or its amendment in a real society.[96]

It is submitted however that, in as much as man has decided to give up some of his freedom to the state in return for protection from the brutish state of nature, the social contract must be enforced by the state through the 'institutional framework' of the law. The social contract therefore needs to transit into a legal contract to make it legally enforceable. Bernasconi observed that the legislator (i.e. the law) is an indication that the legitimacy of the social contract has been delayed.[97] In other words, the social contract is the first stage in the process of agreement, while the legal contract is the second and final stage. The social contract is however the starting point. It encapsulates the principles of justice that have evolved through the society's idea of what is just and unjust. In the process, there is a freedom of choice on the part of members of the society to give up some of their rights for the greater good. It is the degree of enforceability that differentiates the social contract from the legal contract.

## 2.3 Rawls' Theory of Justice

Rawls' theory of justice builds on the social contract theory. It was propounded in great detail by Rawls in his *A Theory of Justice*,[98] where he stated that:

> My aim is to present a conception of justice which generalizes and carries to a higher level of abstraction the familiar theory of the social contract as found in, say, Locke, Rousseau and Kant.

He observed that the social contract has evolved from being just an agreement to enter into a particular society or set up a particular form of government. Rather, the principles

[96] Russell Hardin, *Why a Constitution*. Appearing in Denis J. Galligan and Mila Versteeg (eds.), *Social and Political Foundations of Constitutions* (Cambridge University Press, 2013) at 54.
[97] Robert Bernasconi, *Rousseau and the Supplement to the Social Contract: Deconstruction and the Possibility of Democracy* (1989-1990) 11 Cardozo L. Rev. 1539 at 1558.
[98] John Rawls, *A Theory of Justice* (The Belknapp Press of Harvard University Press, 1971).

underlining the contract are those which require men to decide in advance how to regulate their affairs, assign basic rights and duties and to determine the division of social benefits.[99] It is this decision that has given rise to his theory of justice in the distribution of existing energy resources between present and future generations. For instance, Barry proposed that the consumption of non-renewable natural resources over time should be compensated for in the sense that later generations should be left no worse off than they would have been without the depletion.[100] This is the 'resourcist view' of the theory of justice.[101]

This resourcist view can be garnered from Rawls theory, which he based on the social contract value of distributive justice.[102] Parties to the social contract would choose to allocate present resources so as to both preserve the gains of culture and civilization, maintain intact those just institutions that have been established and put aside in each period of time a suitable amount of real capital accumulation. In doing this, Rawls assumes that the individuals in the original position are motivated, not by self-interest, but by an altruistic desire to benefit their descendants.

Hubin, in analyzing Rawls' works, observed that there are two circumstantial assumptions in ensuring justice for future generations:[103]

- We must postulate either that there will be ever expanding sources of raw materials and energy for us to exploit or that mankind will achieve homeostasis in his environment through population control and technological advances; or

- Natural resources will be exhausted no matter how provident we are

[99] John Rawls, *A Theory of Justice: Revised Edition* (Harvard University Press, 1999) 10.
[100] Brian Barry, *The Ethics of Resource Depletion*. Appearing in *Democracy, Power and Justice*. (Oxford Clarendon Press, 1989). 519.
[101] Edward Page, *Intergenerational Justice and Climate Change*. (1999) Political Studies XLVII 53-66 at 55.
[102] Jim Gardner, *Discrimination against Future Generations: The Possibility of Constitutional Limitation*. (1978-1979) 9 Envtl. L. 29 at 30-31.
[103] Clayton Hubin, *Justice and Future Generations* (1976) Vl. 6 No. 1, Philosophy & Public Affairs 70-83 at 73.

He further stated that there is no good evidence that either of these assumptions will be proven correct. The principle of precaution discussed later below necessitates the need to err on the side of caution and thereby jettison the first assumption. Hubin at least conceded that it seems reasonable to claim that we have a duty of beneficence towards future generations, and that if we fail to carry out this duty, we have acted wrongly against distant future generations and unjustly against immediate future generations.[104] This duty of beneficience however implies an affirmative obligation to promote the well-being of future generations.[105]

In determining the level of the commitments of the present generation to the future, Rawls relied on the device of the social contract. The goal of the contract is not the maximization of welfare for the present but an agreement on the principles of justice which would determine the basic structure of society.[106] Our duty to preserve energy resources today was encapsulated by Rawls as a social contract entered into by the present generation in the original position without knowledge of the needs of future generations and without knowledge of their capacity to come up with new natural energy resources.[107] Erring on the side of caution by adopting Hubin's second assumption therefore appears appropriate for now.

## 2.4 Possible Arguments against the Theories

There are sure to be those who would argue against the obligation of the present generation to future generations.[108] Weiss, in her analysis, listed three models, one of which is the 'opulent model", which denies that any such obligation exists.[109] There will be the argument that, for there to be a valid social contract both parties must be

[104] Ibid. 83.
[105] Jeffrey M. Garba (n. 87) at 271
[106] David Heyd, *A Value or an Obligation? Rawls on Justice to Future Generations*. Appearing in Axel Gosseries and Lukas H. Meyer (eds.). *Intergenerational Justice*. (Oxford University Press, 2009) 172
[107] Ibid.
[108] Edith Brown Weiss, *In Fairness to Future Generations and Sustainable Development* (1992-1993) 8 Am. U.J. Int'l. L. & Pol'y 19.
[109] Ibid.

present, and since future generations are not in existence, such a contract cannot be said to be valid.[110] Such people may want to argue that the original social contract theory (i.e. the first strand discussed under paragraph 2.2) was between the individuals who gave up their rights on the one hand and the state on the other. However, it must be pointed out that original social contract was entered into by individuals who agreed to give up rights to a central authority or government. The government was not a party to this agreement and its interests were in maintaining the terms of the contract.[111] In other words, there was only 'one party' to the contract. As such, under the second strand of the social contract, future generations do not need to be present for the contract to be valid.

To those who may want to argue that the wrongful acts of the present generation require identifiable victims in the future for a social contract to arise,[112] the position of Parfit is instructive. He argued that what is important is that there is an identifiable wrong which may cause a catastrophe in the future, regardless of the fact that the persons to be affected cannot be identified.[113] In other words, if future generations were to have a voice today on the present rate of consumption of natural resources, what would their reaction be? This idea of an identifiable wrong may be a valid answer to opponents like Beckerman. He gave the following illustration:[114]

> Suppose somebody had made preparations to set off a bomb in, say, two hundred years' time, or buried some radioactive nuclear waste in an unsafe location. This would harm a lot of people who do not yet exist. But it would be wrong to say that their rights not to be harmed had been violated. Since they did not exist when the delayed-action bomb was planted they could not be said to have any rights.

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[110] Ibid.

[111] Paul Hermack, *The Constitution is the Social Contract so it must be a Contract…Right? A Critique of Originalism as Interpretive Method*. (2006-2007) 33 WM. Mitchell L. Rev. 1403 at 1412.

[112] Ted Allen, '*The Philippine Children's Case: Recognizing Legal Standing for Future Generations*' (1993-1994) 6 Geo. Int'l. Envtl. L. Rev. 713.

[113] Derek Parfit, *Future Generations: Further Problems*. (1982) Vol. 11 No. 2 Philosophy and Public Affairs 113-172 at 117.

[114] Wilfred Beckerman, *The Impossibility of a Theory of Intergenerational Justice*. Appearing in Joerg Chet Tremmel (ed.). *Handbook of Intergenerational Justice*. (Edward Elgar Publishing Limited, 2006) at 57.

The questions to be asked at this stage are: Firstly, is it right to bury radioactive waste in an unsafe location? Secondly, what would be the reaction of the present generation if such an act could be a threat to it?[115] Based on Parfit's argument, the identifiable wrong here is the act of burying radioactive wastes in an unsafe location, and the fact that future generations are not around to demand for a safe conduct on the part of the present generation is immaterial. Beckerman submitted that, at best, a moral obligation has been neglected and not that a right has been violated.[116] It may however be stated that it is the recognition of these moral obligations that provide the normative basis of the law.

Finally, some may want to argue that we should not bother about future generations as they should be able to invent new technologies that will address all anticipated challenges in energy supply. Beauchamp and Childress believe this will amount to the present generation assuming that future generations will consent to the risk.[117] The risk here is the high probability of there not being new energy sources in the future. The present generation cannot make this assumption on behalf of future generations.

There seems to be no legal basis for requiring the present generation to be bound by obligations to future generations. Lai and Lorne suggested that, although there is no enforceable contract between present and future generations, the interest of future generations can be protected today by parties who are willing to enter into binding agreements that run with the land in property law under common law rules.[118] This however raises the issue of privity of contract, also a common law concept, which renders a contract valid only between parties to it. Although Maggio reiterated the fact that the Brundtland Commission was looking into the issue of creating an international ombudsman to reconcile the interests of present and future generations, the legal

[115] Ibid.
[116] ibid.
[117] Tom L. Beauchamp and James F. Childress, *Principles of Biomedical Ethics* (5th edn., Oxford University Press, 1994).
[118] Lawrence Wai-Chung Lai and Frank T. Lorne eds, *Understanding and Implementing Sustainable Development*. (Nova Science Publishers Inc. 2003) 9.

issues still remain unresolved,[119] as he also observed that there is no international convention that provides guidelines on how to reconcile the needs of present and future generations.

However, inter-generational equity has philosophical underpinnings and is reflected in the desire of man to provide for his offspring. Protection of the interests of future generations seems to have received a measure of support outside Europe. In a case from the Philippines, the case of *Oposa v. Factoran,*[120] an action was brought on behalf of present generation and generations yet unborn. The court ruled that the petitioners had the legal standing to file the case. Kavka and Warren have also observed that lawyers and trustees of estates represent deceased persons and the interests of unborn generations as stated in wills.[121] So, the issue of representation should not present much of a problem in their view. For instance, in the United States, Section 101 of the National Environmental Policy Act of 1969 places a duty on government to use all practicable means to ensure the fulfillment of the responsibilities of each generation as trustees of the environment for succeeding generations.

The importance of the duty to future generations appears to have been highlighted in a recent case from the Netherlands. In the case of *Urgenda Foundation v. The State of Netherlands (Ministry of Infrastructure and the Environment)*,[122] the court held that the state of Netherlands had a duty to curb carbon emissions in furtherance of its climate change obligations. The interest of present and future generations in relation to climate change impacts provided a basis for the ruling against the government.[123] The Urgenda Foundation in that case had argued that the State was acting unlawfully as it failed to

[119] G.F. Maggio, '*Inter/Intra-generational Equity: Current Applications under International Law for Promoting the Sustainable Development of Natural Resources*' (1996-1997) 4 Buffalo Environmental Law Journal, 161 at 188.
[120] G.R. No. 101083, July 30, 1993. (A case from The Phillipines).
[121] G.S. Kavka and V. Warren, *Can Future Generations be Represented?* Appearing in Mark J. Smith ed, *Thinking through the Environment*. (Routledge 1999) 97.
[122] C/09/456689/HA ZA 13 -1396, Judgement of 24 June, 2015.
[123] Institute for European Environmental Policy, '*Establishing an EU Guardian for Future Generations*' (September 2015) at page 17. Available at www.ieep.eu/assets/1978/Establishing_an_EU_Guardian_for_Future-Generations_FINAL_Report_25.09.2015_with_logo.pdf accessed on 30 March, 2016.

prevent the causing of more than proportionate damage from its territory to current and future generations in the Netherlands and abroad.[124]

## 2.5 Importance of the Concept of Sustainable Development to the Theory of Obligation to Future Generations.

Weiss succinctly highlights the importance of the concept of sustainable development to the theory of obligation to future generations when she stated that:[125]

> Sustainable development relies on a commitment to equity with future generations. This ethical and philosophical commitment acts as a constraint on a natural inclination to take advantage of our temporary control over the earth's resources, and to use them only for our own benefit without careful regard for what we leave to our children and their descendants.

The definition of the concept of sustainable development provided by the Brundtland Commission recognizes the duty imposed on the present generation to ensure that the needs of future generations are not jeopardized in the former's quest for development. It is argued here that the concept is a modern version of aspects of the social contract theory relevant to this research and later expressed through Rawls' Theory of Justice. It stresses the need to base the theories on, not just economic fundamentals as seen prior to the French revolution,[126] but also on environmental and social fundamentals. On their own, economic fundamentals tend to engender the subjugation of nature.

These theories have been expressed through the principles that make up the concept of sustainable development – principles such as inter and intra-generational equity. These principles are increasingly acquiring the force of the law, as will be revealed in Chapter

[124] Ibid.
[125] Edith Brown Weiss (n.108).
[126] See 2.2 para. 4.

Three – making the obligation to future generations to become more of a legally binding obligation rather than a social one rooted in philosophical underpinnings. Some of these principles will be examined later in the chapter.

## 2.6 How has the Concept Influenced the Evolution of a Legal Framework in the EU?

### 2.6.1 Energy Security versus Climate Change

The issues for determination here are:

- Does the carrying out of the obligation to future generations (expressed through the concept) means the utilization of sustainable energy sources to address the concerns of climate change through carbon emission reduction?

- Does the carrying out of the said obligation mean the utilization of such energy sources to ensure energy security?

Looking at the evolving legal framework within the EU, it appears that there is a tendency towards interpreting the concept of sustainable development to mean development of sustainable energy sources (of which renewable energy is one) for the purposes of carbon emission reduction. This is the crux of the opposition to such technologies as the issue of whether climate change is real or not is very contentious. But, in reality, the challenges of energy security are very real.

A look at some of the theories traceable to the concept of sustainable development may reveal the connection of the concept to the obligation to ensure sustainability in energy production and consumption. The root of the concept has been traced to the era of early ‘European Enlightenment’ when German ‘kameralists’ began to plan their dynasties’

woodlands '*nachhaltig*' in order to hand them undiminished to future generations.[127] Carlowitz in his book *Sylvicultura oeconomica oder Anweisung zur wilden Baumzucht*, which criticized the over-exploitation and devastation of forests, stipulated the rule that wood should be used with care.[128] It was here and with reference to wood (the key resource of that time) that the German world *nachahaltig* (sustainable) appeared in the modern sense.

This concept later found expression in the 1972 Report to the Club of Rome.[129] The report expressed concern over the geometric rise in the consumption of non-renewable natural resources, with a warning that if the rate of consumption remained unchanged, a limit to economic growth would soon be reached.[130] Some theorists may have in fact interpreted environmental protection as being synonymous with the conservation of natural resources. Emas, while analysing the works of Dernbach, stated that a nation is required to consider and protect its environment and natural resources on which its current and future development depends.[131] This, he argued, is the foundation of the concept of sustainable development.

### 2.6.2 Energy Structure

It will be shown in the thesis that the evolving legal framework for general energy security within the EU appears to still be heavily in favour of conventional energy sources. As EU energy policy evolves into a sustainable energy policy, it will be shown that a diversification of energy sources, with increasing roles for renewable energy sources, will ensure that the goals of energy security are achieved. Some underlining

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[127] Ulrich Grober, '*Deep Roots – A Conceptual History of "Sustainable Development"(Nachhaltigkeit)'* (Wissenschaftszentrum Berlin fur Sozialforschung, 2007).

[128] Ulrich Grober, '*The Discovery of Sustainability: The Genealogy of a Term*' in Judith C. Enders and Moritz Remig (eds), '*Theories of Sustainable Development*' (Routledge, 2015) at 11.

[129] Donella H. Meadows, Dennis L. Meadows and Jorgen Randers., '*The Limits to Growth*' (A Potomac Associates Book, 1972).

[130] Ibid.

[131] Rachel Emas, '*The Concept of Sustainable Development: Definition and Defining Principles*' (Brief for GSDR, 2015). Available at sustainabledevelopment.un.org/content/documents/5839GSDR%202015_SD_concept_definition_ref.pdf. Accessed on 27 February, 2016.

theories of the concept of sustainable development elucidate more on a sustainable energy structure.

Protection of the environment should not translate to limits to growth as identified by Meadows *et al*.[132] The principles of weak and strong sustainability are, by extension, applicable here. While the former theory advocates for a reasonable balance between renewable and non-renewable energy sources,[133] the latter advocates for strict maintenance of a constant value of each type of energy source at every point in time.[134] While strong sustainability may require limits to growth, which is unrealistic, weak sustainability provides for a more realistic utilization of energy sources as it requires maintenance of a reasonable balance between renewable and non-renewable energy sources. This research advocates weak sustainability in the energy structure for the EU.

Strong sustainability here is interpreted to mean the total reliance on renewable as the only source of energy. This is not feasible now in view of the fact that the technologies are still evolving and the issues of variability and reliance on subsidies are still prevalent. Weak sustainability is interpreted to mean a balance between conventional and renewable energy sources in the energy mix, with renewable enjoying a gradual increase in share. Bosselmann believes the approach in the EU should be based on weak sustainability with the gradual replacement of conventional energy sources with renewables.[135] This is because a strict concept of strong sustainability is difficult to realise.[136]

Daly *et* al identified some additional policy guidelines for sustainable development. He observed that non-renewable resources should only be depleted at a rate equal to the rate of creation of renewable substitutes.[137] It will be shown that the trend in the energy

[132] n. 129.
[133] Antonio Boggia and Carla Cortina, '*Measuring Sustainable Development using a Multi-Criteria Model: A Case Study*' (2010) 91 Journal of Environmental Management, 2301-2306.
[134] Herman E. Daly, '*On Wilfred Beckerman's Critique of Sustainable Development*' (1995) 4(1) Environ Values, 49-55.
[135] Klauss Bosselmann, 'Ethical Implications' in Adrian J. Bradbrook et al (eds.), 'The Law of Energy for Sustainable Development' (IUCN Academy of Environmental Law Research Studies). (Cambridge University Press, 2005) 90.
[136] Ibid. Quoting the opinion of the National Sustainability Council and the Independent Environmental Advisory Council of Germany.
[137] Herman E. Daly and Kenneth N. Townsend, '*Valuing the Earth: Economics, Ecology, Ethics*' (MIT Press, 1993).

structure in the EU reveals lopsidedness in favour of conventional energy sources, with renewable energy technologies still lagging behind. The evolving legal framework has subsumed renewable energy sources under a general energy policy.

## 2.7 Conclusion

The theory of obligations has evolved over the centuries. It may be traced to theories such as aspects of the social contract theory and Rawls' theory of justice. In modern times, it is being increasingly reflected in the concept of sustainable development. In the days of Hobbes, it was based on the subjugation of nature for the greater benefit of man. Utilitarianism was therefore the watch word. Rawls' theory of justice later evolved which advocated the protection of nature for the benefit of future generations. It is argued that he concept of sustainable development is its modern version. Furthermore, it allows economic development to proceed as long as environmental development is not sacrificed. Possible arguments and theories against the concept such as the hierarchy theory were examined and their flaws make arguments for the obligations towards future generations imperative.

Energy is required for the sustainable development of any society, although its consumption by the present generation must also be sustainable in order for future generations to have a stock of capital to rely on for development. The present generation therefore has a duty towards future generations to preserve energy sources. This obligation requires a symbiotic relationship between man and nature for it to be successfully executed by the present generation i.e a relationship where neither man nor nature is superior to the other. However, the checks and balances offered by the tools of the law are needed. The evolution of a legal framework putting into practice the theory of obligations will be examined in subsequent chapters.

The present generation can take consolation in the fact that it will also benefit while carrying out the obligations. Also, although the obligations are rooted in theories with

philosophical underpinnings, they are increasingly acquiring the status of legal principles which form the bedrock for the evolving legal framework. This is discussed further in Chapter Three. The question to be asked and answered therefore in the next chapter is: Is the duty towards future generations enforceable under the law?

The concept of sustainable development has influenced the evolving legal framework for the development of sustainable energy sources in the EU (of which renewable energy is one). However, there has been a tendency to interpret the concept to mean the development of sustainable energy sources for the purposes of carbon emission reduction rather than for the purposes of energy security. This interpretation has influenced the region's energy policy as well as opposition to renewable energy sources. This is examined in detail later in the thesis.

While there are practical difficulties in leaving behind a stock of conventional energy capital for future generations in order to avoid limits to growth, the present generation can progressively leave behind a combined stock of renewable and non-renewable energy capital. The principle of strong sustainability is not practicable while the principle of weak sustainability has to be applied in a more responsible way. The obligations will be fulfilled when there is a healthy balance between reserves of both conventional energy capital and renewable energy capital for development by present and future generations.

# CHAPTER THREE

# SUSTAINABLE DEVELOPMENT AS A LEGAL PRINCIPLE: EVOLUTION OF THE OBLIGATION TO FUTURE GENERATIONS INTO A LEGAL OBLIGATION

## 3.1 Introduction

This chapter looks at the evolution of the theory of obligation to future generations (aided by the theories examined in chapter two) into a legal obligation. As stated in chapter two, the concept of sustainable development is a modern version of the theory of obligation to future generations. The evolution of the concept of sustainable development into a legal principle is therefore important. This chapter examines whether the obligation to future generations has evolved from being an idea backed by theories into a legal principle. The aim is to trace the trajectory from an idea to a theory (examined in chapter two); from theory to legal principle (to be examined in this chapter); and from legal principle to legally binding rules (to be examined in subsequent chapters). Determining the status of the concept as a legal principle is important, as will be shown later, because the principle forms the basis of whatever legal framework there is or will be on sustainable energy development.

The argument is that the concept of sustainable development has evolved over the years through customary practice and acceptance by the member states of the EU. As such, its principles have become recognized by those states, especially through judicial pronouncements. It will however be shown that its evolution through legal instruments like treaties has been severely restricted because it is mostly provided for in the preambles as a mere statement of intention. Therefore, the main issue to be determined is whether the concept can still be said to have evolved into a legal principle, considering the fact that it has only been given prominence by the courts in their judgments while treaties have confined it mostly to preambles. In cases where it has appeared in the main bodies of some legal instruments, it is expressed in non-binding form, and there is a tendency to classify it as ‘soft law.’ Is this evolution enough to classify the concept as a legal principle? The conclusion will be that sustainable development, although a concept, is made up of legal principles. This qualifies it to be a

legal principle that can be the foundation of the legal framework on sustainable energy production and consumption proposed in this research.

## 3.2 Is Sustainable Development a Concept or a Principle?

To start with, it is important to determine whether the concept of sustainable development is a principle before determining whether it can be a legal principle. In examining the controversy on whether sustainable development is a 'concept' or a 'principle,' part of the observations of Kiss on the distinction between the two is adopted. He stated that:

> A "concept" is an abstract creation of human mind without having a material content. "Principles" are, on the contrary, fundamental norms for the orientation of persons, authorities, or others, materializing the content of legal, moral, or intellectual concepts, without necessarily being directly applicable. In this sense, a state is a concept, while its constitution proclaims principles in order to establish the fundamental rules of its functioning. In the application of such principles, specific laws are enacted to govern the functioning of the state's organs, and the behavior of persons.[138] (emphasis mine).

Lowe does not see the concept as a legal principle because there is no indication that drafters of legal instruments regard it as having the force of law.[139] Kiss, on his part, suggests that sustainable development is a concept with several principles that have been proposed to establish its concrete content. [140] Baker refers to such principles as

[138] Alexandre Kiss, *Public Lectures on International Environmental Law*. Appearing in Adrian J. Bradbrook et al eds, *The Law of Energy for Sustainable Development* (Cambridge University Press 2005) 15.
[139] Vaughan Lowe, '*Sustainable Development and Unsustainable Arguments*.' Appearing in Alan E. Boyle and David A.C. Freestone eds., *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford University Press 1999).
[140] Alexandre Kiss, '*Academy Lectures on Environmental Law*' (2003) IUCN Academy of Environmental Law.

'normative principles of sustainable development.'[141] Verschuuren, on his part, asserted that the concept is not a principle but an ideal or a goal, and that principles are required to move towards realization of such ideals.[142] He therefore believes the concept is different from a principle. According to him, principles such as the precautionary principle, the polluter pays principle and the principle of integration, are needed to actualize that ideal or goal which is sustainable development. He found support in this assertion in the efforts by Germany to codify the precautionary principle, the polluter pays principle and the co-operation principle;[143] and also the codification of the principles of intergenerational equity and the precautionary principle through the Environment and Biodiversity Conservation Act of 1999 in Australia.

The question may then be asked: is the concept of sustainable development different from adjoining principles such as the precautionary, polluter pays, intergenerational equity or common but differentiated responsibility principles? A possible answer to this question is to consider the concept as being like an entity made up of different parts. In other words, it is the different parts that make up the whole, just as the human body is made up of the arms, legs and all other parts. Danaher refers to them as 'subsidiary principles' which can be seen as complementing the goal of sustainable development as well as offering a means towards its attainment.'[144] He further stated that the key to determining the legal enforceability of the concept of sustainable development lies in considering such subsidiary principles apart from the main concept itself.[145]

On their part, Cordonnier-Segger *et al* observed that the principles of common but differentiated responsibility, precaution and participation are essential parts of international sustainable development law.[146] Sustainable development can therefore

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[141] Susan Baker, '*Sustainable* Development' (Routledge, 2006) at 36.

[142] Verschuuren J, '*Sustainable Development and the Nature of Environmental Legal Principles*' (2006) (1) 9 Potschefstroom Elec L.J. at 17.

[143] Bundesministerium fur umweit , Naturzchutz und Reaktorsicherheit, Entwurf Umweltgesetzbuch (UGBKomE) (1997).

[144] John Danaher, '*Protecting the Future or Compromising the Present? Sustainable Development and the Law*' (2006) 14 ISLR 117 at 119-120.

[145] Ibid 131.

[146] Marie-Claire Cordonier Segger *et al*, '*Prospects for Principles of International Sustainable Development Law after the WSSD: Common but Differentiated Responsibilities, Precaution and Participation'* (2003) Vol. 12 Issue 1 Review of European Community & International Environmental Law 54 at 66.

be considered as a concept made up of principles, taking into consideration the analogy of the human body above. This is a further reflection of the concept as being multi-dimensional in nature. Paine therefore said "sustainable development is about a whole: about seeing things systemically and with regard to all the connections – and implications – of what we do."[147]

Considering the above, can the concept of sustainable development (made up of its associated principles) now be considered as a legal principle? The concept may have acquired normativity through the adjoining principles that are associated with it. The associated principles have appeared in several judicial deliberations and legislative instruments to warrant their being considered as legal principles. The numerous legal principles that make up the concept of sustainable development have different degrees of normativity. Ellis therefore sees the concept of sustainable development as an umbrella concept which, in an attempt to understand the roles these principles play in specific contexts and the relative weight to be given to each, establishes a priority between them as the need arises.[148] What this means in essence is that the concept of sustainable development acts as a balancing mechanism which operates to elevate each of the principles to adapt to a particular situation. However, as Ellis further pointed out, the concept does not establish a hierarchy among the principles but rather provides necessary interpretative guidance when the principles are brought to play.[149]

These principles cannot therefore be operational without constant reference to the concept of sustainable development, and is a pointer to those who may be tempted to think that those principles are distinct from the concept. Whatever their degree of normativity, the principles that constitute the concept of sustainable development could form a concrete foundation for legal systems in almost every country in the world, as

[147] Greg Paine, '*Walk with the Elephant – Sustainable Development as Re-embedding: Nature versus Ego*' (2009) http://www.thefifthestate.com.au/archives/2279. Accessed on 1st June 2013.
[148] Jaye Ellis, '*Sustainable Development as a Legal Principle: A Rhetorical Analysis*' (2008) http://www.scribd.com/doc/51448971/Sustainable-Development-as-a-Legal-Principle-A-Rhetorical-Analysis accessed on 1st June 2013.
[149] Ibid 13.

exemplified in the laws on Environmental Impact Assessment,[150] which allow economic development projects to go within the purview of social and environmental considerations.

The final issue that needs to be considered in this section is that of an appropriate definition for the concept of sustainable development, lack of which Lowe sees as affecting its status as a legal principle.[151] The multi-dimensional nature of the concept of sustainable development, has made it difficult to ensure an internationally acceptable definition, although the definition by the Brundtland Commission is the most widely accepted. Tladi does not see this so called lack of a mutually agreeable definition as strong enough to affect its status as a legal principle.[152] He cited examples of principles such as the equidistance principle, the proportionality principle and the principle of self-determination which, though are still surrounded by a measure of uncertainty, and do not therefore operate in an all-or-nothing fashion, are nevertheless firmly established principles of international law.

## 3.3 From Principle to Law - Why is it Important?

It is pertinent to point out that there is a difference between a law and a principle. A principle is not law but a fundamental foundation on which the law may be based. This fundamental foundation may be normative in character, as may be the case with the concept of sustainable development and its associated principles such as the precautionary and polluter pays principles. In support of this assertion is the view of Dworkin who sees legal principles as a standard to be observed by the law, and to be used by judges to justify their reasoning in decision making.[153] In distinguishing between a law and a principle, he stated that:

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[150] David R. Hodas, '*The Role of Law in Defining Sustainable Development: NEPA Reconsidered*' (1998) 3 Widener L. Symp. J. 1 at 6.

[151] Vaughan Lowe (n 139) at 25.

[152] Dire Tladi, '*Sustainable Development in International Law: An Analysis of Key Enviro-Economic* Instruments' (Pretoria University Law Press, 2007) at 101.

[153] Ronald Dworkin, '*Taking Rights Seriously*' (Harvard University Press, 1978) 65.

> The difference between legal principles and legal rules is a logical distinction. Both sets of standards point to particular decisions about legal obligation in particular circumstances, but they differ in the character of the direction they give. Rules are applicable in an all-or-nothing fashion. If the facts a rule stipulates are given, then either the rule is valid, in which case the answer it supplies must be accepted, or it is not, in which case it contributes nothing to the decision.[154]

What can be gathered from Dworkin's statement above is that legal rules have more authority than legal principles. Legal principles have a wider scope which is narrowed down through legal rules in their applicability to particular situations. Raz seems to buttress this point when he stated that principles are often stated in ways which leave their subjects unspecified.[155] In addition, he stated that rules prescribe relatively specific acts while principles prescribe highly unspecific actions.[156] Dworkin seems to agree with this distinction between a legal rule and a legal principle when he stated that the former leads to a determinate result through specific actions while the latter does not require specific actions to be taken.[157]

Determining the legal status of the concept of sustainable development is critical at this point as it is the principle upon which a sustainable energy policy and law on sustainable energy consumption will be based. If, according to Raz, principles are the grounds for interpreting and making laws,[158] then the legal character of the concept is important for the law on sustainable energy in the EU. The sustainable energy policy and the law on sustainable energy consumption are means of ensuring the fulfilment of the obligations to future generations discussed earlier in chapter two. However, the law and policy are built on legal principles. Bosselmann asserts that such principles as sustainable development can influence policies and laws independently of their legal nature, but, to have legal effect, may have to be expressly passed into law or

[154] Ronald M. Dworkin, '*The Model of Rules*' (1967) 35 U. Chi. L. Rev. 14 at 25.
[155] Joseph Raz, '*Legal Principles and the Limits of Law*' (1972) Vol. 81 No. 5 The Yale Law Journal 823-854 at 836.
[156] Ibid at 838.
[157] Ronald Dworkin (n. 154) at 22.
[158] Joseph Raz (n. 155) at 839.

demonstrate international consensus through long-standing practice.[159] In other words, being a legal principle is not enough. There is still a need for a transition to legally binding rules through the passage of hard laws. In any case, acquiring the status of a legal principle comes first as stated earlier as a foundation for any future law on sustainability in energy consumption.

Some of the legal principles attributable to the concept of sustainable development today may have predated the concept itself and some may have already been applied under international environmental law, being legal principles upon which such a law can be based. Principle 27 of the Rio Declaration appears to recognize this fact when it provides that: "States and people shall cooperate in good faith… in the <u>further development</u> of international law in the field of sustainable development." (emphasis mine). These pre-existing principles reflect the evolutionary history of the concept as humanity moves from one stage of development to another, hence the distinction made by Sands between existing legal principles known in the field of international law and new ones emerging after the concept became popular is relevant.[160]

The fundamental difference between these two bodies of law was aptly captured by Futrell when he stated:[161]

> But even if international environmental institutions are strengthened, and honest enforcement efforts increase compliance with the laws, states will not have addressed the fundamental failing in our environmental protection schemes. While we have made a good beginning on pollution control laws, our laws governing development activities are primitive. Our agencies, such as the U.S. Environmental Protection Agency (EPA), are reactive agencies. Most of the real environmental problems arise out of unsustainable development activities. We need to go beyond the current law of environmental protection to a new goal of law that encourages

[159] Klaus Bosselmann, *The Principles of Sustainability: Transforming Law and Governance* (Ashgate Publishing Ltd 2008) 46.
[160] P. Sands, '*International Law in the Field of Sustainable Development*' (1994) 65 BYBIL at 54.
[161] J. William Futrell, '*Defining Sustainable Development Law'* (2004-2005) 19 Nat. Resources & Env't, 9.

> sustainable development instead of the current system, which rewards unsustainable activity.

What this means in essence is that the international environmental law existing prior to formal identification of the concept of sustainable development in 1987 was restricted to purely environmental matters (for example pollution), while international environmental law emerging thereafter added the need for development to existing environmental law. The evolutionary process was, for instance, captured in *Nuclear Tests (Australia v. France)*[162] where Judge Weeramantry described inter-generational equity as an important and rapidly developing principle of contemporary environmental law. A reconciliation of international environmental law existing prior to the concept of sustainable development and international development law emerging after the concept was noted by Judge Weeramantry in his separate opinion to the judgment of the court in *Gabcikovo-Nagmayaros,*[163] when he said:

> The problem of steering a course between the needs of development and the necessity to protect the environment is a problem alike of the law of development and the law of the environment. Both these vital and developing areas of law require, indeed assume, the existence of a principle that harmonizes both needs… The law necessarily contains within itself the principle of reconciliation. That principle is the principle of sustainable development.

On his part, Dernbach observed that it was not clear that existing environmental and natural resources law could by itself drive sustainable development, as they are only better at preventing the most risky and damaging acts, and are less effective at requiring or encouraging the most sustainable acts.[164] He further observed that, if we are to move our environmental goals from damage control toward restoration, there is a need for modification in the existing law so that they can expressly encourage or require

[162] (1974) 1 ICJ Report at 341.
[163] (1997) 1 ICJ Report 7 at 90.
[164] John C. Dernbach, '*Creating the Law of Environmentally Sustainable Economic Development*'. (2011) Vol. 28 Issue 3 Pace Envtl. L. Rev. 614 at 628.

specific kinds of economic development that tend to be more sustainable.[165] What may be gathered from all that has been said so far is that we need to look beyond environmental law principles in ensuring sustainability. Rather, the focus should be on building a legal foundation for sustainability based on the principles of the concept of sustainable development. Bragdon for instance identified the Convention on Biological Diversity as a good starting point for the further development of international law in the field of sustainable development as required by Principle 27 of the Rio Declaration.[166] In essence, what used to be known as international environmental law needs to completely evolve into international sustainable development law for there to be development for present and future generations. This evolution is typified under the Rio Declaration and Agenda 21 (discussed under 3.7).

## 3.4 Sustainable Development and its Evolution through Treaties/Conventions and Judicial Decisions

The principles and goals of the concept of sustainable development have, in a lot of cases, been restricted to the preambles of treaties where they are expressed as mere statements of intention. Even in treaties where they have appeared in the main body, they appear to have been expressed in such a way that they may be said to be non-binding. Declarations such as the Rio Declaration which are dedicated to the principles of sustainable development are expressed in non-binding soft law form.

Barral observed that international lawyers view the concept as being of little legal significance because references to it are confined to the preamble of the treaties in which it appears.[167] He however also observed that a great number of these references are to be found in the operative parts of the treaties which are binding on the parties. It may however be argued that such references in the preamble and main body of a treaty

[165] Ibid 629.

[166] Susan H. Bragdon, '*The Evolution and Future of the Law of Sustainable Development: Lessons from the Convention on Biological Diversity*' (1995-1996) 8 Geo. Int'l Envtl. L. Rev. 423 at 434.

[167] Virginie Barral, '*Sustainable Development in International Law: Nature and Operation of an Evolutive Legal Norm*' (2012) 23(2) European Journal of International Law, 377-400.

are the first step and that express proclamations are needed for the principles of the concept to become legally binding. Boyle observed that non-binding soft law instruments (like the Rio Declaration, and by extension references to the concept in non-binding form in treaties) are the first step in a process eventually leading to the conclusion of a multilateral treaty.[168]

Can references to the concept in judicial decisions and treaties be enough to confer legal status on the concept? Schwarz observed that one should distinguish between the legality of the concept acquired through treaty obligations and judicial pronouncements and legality acquired through state practice as the former stands less challenged because they are linked to sources of binding law, though the obligations created may not be of universal application.[169] She further observed that though appearance of the concept in treaties, judicial decisions and state acceptance may not have created a 'legal obligation', they have created a 'legal responsibility' for the environment.[170] It is difficult to see the difference between the two, but such a difference may lie in regarding the latter as the first step, culminating in the former. In any case, Boyle observed that even if sustainable development is not in the nature of a legal obligation, it does represent a policy goal or principle that can influence the outcome of litigation as well as lead to significant changes and developments in the law.[171]

Thus references to the concept in the preambles and main bodies of treaties and conventions which oblige states to take steps towards ensuring sustainable development are enough to make it an appropriate principle of law because they show evidence of increasing usage. Some writers have stated that, although the international expectation that states should conduct their affairs in accordance with the objectives of sustainable development is plausible, it still falls short of a binding legal obligation,[172] as there is yet to be an international legal obligation that mandates sustainability in

[168] Alan Boyle, '*Soft Law in International Law-Making*' Appearing in Malcolm D. Evans, *International Law* (4th Edition Oxford University Press, 2014) 118 at 123.
[169] Priscilla Schwarz, *Sustainable Development in International Law* (2005) 5 Non-St. Actors & Int'l L, 127 at 138.
[170] Ibid 139.
[171] Alan Boyle (n. 168).
[172] B.M. Marong, '*From Rio to Johannesburg: Reflections on the Role of International Legal Norms in Sustainable Development*' (2003-2004) 16 Geo. Int'l. L. Rev. 21 at 56.

development.[173] However, the government in Wales is taking the lead ahead of other regions in the United Kingdom by viewing sustainable development as the legal responsibility of all and sundry, and therefore proposing legislation on sustainable development as the central organizing principle of the government.[174]

Duncan French observed that, though references to the concept of sustainable development in treaties may be regarded as mere political statements, the legal significance of the concept cannot be denied as parties to such treaties can justify their actions by using the concept to interpret such treaties.[175] Furthermore on the issue of sustainable development principles being limited to preambles of treaties, Article 31 of the Vienna Convention on the Law of Treaties provides as follows[176]:-

> (1) A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.
>
> (2) The context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes…

So the fact that it appears in preambles should not render it of no legal value. Article 31(2) is particularly useful in getting around the opposition of the United States to inclusion of principles in the main body of the United Nations Framework Convention on Climate Change in 1992 on the ground that they merely state the intentions of nations and should therefore be confined to the preamble as only commitments are included in the main body of a convention.[177]

Nevertheless, the judiciary has a major role to play in the evolution of the law on sustainable development. While the evolution of the concept through treaties appears to

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[173] Alan Boyle *et al*. (n.139) 16.
[174] http://wales.gov.uk/docs/desh/consultation/130222sustainable-development-resource-pack-en.pdf accessed on 27th May 2013.
[175] Duncan French, *International Law and Policy of Sustainable Development*. Manchester University Press 2005) 44.
[176] http://untreaty.un.org/ilc/texts/instruments/english/conventions/1_1_1969.pdf.
[177] Verschuuren J. (n.142) at p. 2.

have been limited to 'soft law' provisions, its evolution through recognition in judicial decisions has been encouraging. As will be observed below under section 3.6, the principles of the concept have greatly influenced the courts in deciding cases brought before them. Ross and Andresen have stated that the definitional scope of principles such as sustainable development is large, allowing judges to have more room for judicial interpretation.[178] While viewing the concept of sustainable development as possibly being not more than one with a stronger normative content, Voigt believes that use of the principle in various areas of law would enable us to grasp its contents from different angles, safeguarding it against exclusiveness to a specific area of law.[179]

The principles have engineered some form of creativity in the judiciary. VanderZwaag describes a creative judiciary as the 'hidden hand' of sustainable development.[180] He observed as follows:

> In the meantime, judges may play a backstop role in pushing societies in the direction of sustainable development. Not simply guided by personal philosophical passions or class ideology, judges might explicitly refer to the evolving international principles as a checklist for deciding whether the public trust is infringed.[181]

In the *Iron Rhine*, (an arbitration involving two EU member states), the arbitral tribunal appeared to have recognized the concept as a legal principle when it stated that:[182]

> Environmental Law and the law on development stand not as alternatives but as mutually reinforcing, integral concepts, which require that where development may cause significant harm to the environment, there is a

[178] A. Ross A and O.S. Andresen, *Laerebog I Folkeret: Introduktion til den Almindelige Folkeret I Fredstid*. (5th revised edn Copenhagen: NYT Nordisk Forlag 1976) 107.

[179] Christina Voigt, *Sustainable Development as a Principle of International Law: Resolving Conflicts between Climate Measures and WTO* Laws. (Martinus Nijoff Publishers, 2009) at 165.

[180] David VanderZwaag, '*The Concept and Principles of Sustainable Development: "Rio-Formulating" Common Law Doctrines and Environmental Laws*' (1993) 13 Windsor Y.B. Access Just. 39 at 55.

[181] Ibid at 66.

[182] Reports of International Arbitral Awards. 24th May, 2005. Volume XXVII, pp. 35-125, at pp. 66-67. http://untreaty.un.org/cod/riaa/cases/vol_XXVII/35-125.pdf accessed on 18th May 2013.

> duty to prevent, or at least mitigate, such harm… This duty, in the opinion of the Tribunal, has now become a principle of general international law

Gehring and Cordonier-Segger observed that the implication of cases such as the *Iron Rhine* is that where trade liberalization rules such as economic development norms intersect with environmental norms as well as social development norms, the concept of sustainable development may play a normative role in guiding a balanced, mutually supportive, integrated outcome.[183]

A point in favour of the legal character of the concept may be found in Article 38(1) (c) of the Statute of the ICJ which lists the general principles of law recognized by civilized nations as part of the sources of international law. If it is agreed that subsidiary legal principles such as the precautionary principle, the polluter pays principle, the principle of integration and a host of others are all different parts of the whole, then the concept of sustainable development (which is the whole) is a legal principle (albeit a concept made up of legal principles) and is one of the sources of international law. This is because such principles are widely recognized by civilized nations as part of the sources of international law and are valid enough to lay the foundation for a law or legal framework on sustainability in energy production and consumption.

Fundamentally, the definition of the concept of sustainable development by the Brundtland Commission emphasizes the obligation of the present to future generations. In the case of *Oposa v. Factoran*,[184] the need to protect to carry out this obligation and the resulting rights of future generations were emphasized. This obligation has also been acknowledged in judicial pronouncements. For instance, in *Denmark v. Norway*,[185] Judge Weeramantry, in his separate opinion to the judgment of the court, observed that:

> Respect for these elemental constituents of the inheritance of succeeding generations dictated rules and attitudes based upon a concept of an

[183] Markus W. Gehring and Marie-Claire Cordonier-Segger eds, *Sustainable Development in World Trade Law* (Kluwer Law International 2005) 135.
[184] GR. No. 101083. July 30, 1993.
[185] (1993) I.C.J., 38 at 277 (June 14). Available at http://www.icj-cij.org/docket/files/78/676/pdf. Accessed on 14 April 2016.

equitable sharing which was both horizontal in regard to the present generation and vertical for the benefit of generations yet to come.

## 3.5 Hard or Soft Law?

The question may be asked at this point: Can the restricted appearance of the principles of the concept of sustainable development in treaties lead to its classification as "soft law?" Shelton's definition of 'soft law' is adopted here. She defined soft law as any international instrument other than a treaty, containing principles, norms, standards or other statements of expected behavior.[186] The appearances of the concept of sustainable development in several instruments like the Rio Declaration and Agenda 21 (to be examined later) appear to be couched in non-binding form, giving them the status of 'soft law.' They merely express standards of expected behavior.

Boyle and Freestone assert that there is little difference between hard and soft laws, and that sustainable development is not soft law but a general policy which may or may not be adopted by states.[187] This assertion is buoyed by the fact that concrete steps laid down in the main bodies of treaties, which reflect what is stated in the preambles, are actually legally binding steps required to be taken towards achieving sustainable development. It has also been observed that some documents such as the Universal Declaration of Human Rights, which were initially accepted as soft law instruments, later evolved into legally binding documents.[188] In addition, although such references to the concept of sustainable development in treaties may be regarded as "soft law", Birnie *et al*. have observed that such soft laws are an additional secondary source of law, giving a wider room for interpretation and implementation of treaties.[189]

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[186] Dinah Shelton, '*International Law and Relative Normativity*' in Malcolm D. Evans (n. 28) 137 at 159.
[187] Alan Boyle and David Freestone (eds.), (n. 139) at 30.
[188] Steven C. Rockefeller, *Principles of Environmental Conservation and Sustainable Development: Summary and Survey* (1996) 11. Prepared for the Earth Charter Project http://www.earthcharterinaction.org/invent/images/uploads/Principles%20of%20Environmental%20Conservation%20and%20Sust.%20Dev.pdf accessed on 20th May 2013.
[189] Patricia Birnie, Alan Boyle and Catherine Redgwell (eds.), *International Law and the Environment*. (Oxford University Press 2009) 25.

Furthermore, soft law encompasses principles that have evolved through state practice or endorsement. Though the principles of the concept of sustainable development may be classified as soft law, their operational effectiveness is being asserted through state practice, culminating in their appearances in the main bodies of treaties and through judicial recognition. They have however not evolved into legally binding rules yet and remain at the level of principles which can form a solid foundation for the law.

## 3.6 Sustainable Development under International Law

Orebech stated that the root of the law can be found in normative decisions born in the depths of people's souls and given unanimous acceptance by such people.[190] Higgins believes it is the role of the law to ensure an interpretation that promotes such norms.[191] Such widely accepted normative decisions form the basis of customary international law, widely recognized under Article 38(b) of the Statute of the International Court of Justice (ICJ), which provides as follows:-

> The Court, whose function is to decide in accordance with international law such disputes as are submitted to it, shall apply international custom, as evidence of a general practice accepted as law.

Weiss believes the notion that future generations have rights to inherit a robust environment provides a solid normative underpinning for environmentally sustainable development.[192] The principles of the concept of sustainable development may therefore have become legal principles because of their normativity, in view of the fact that what makes them to acquire their status as legal principles is their acceptance and endorsement by states in the comity of nations.[193] While noting that sustainable development is a principle of international law, Tladi observes that it is not confined to any autonomous branch of international law, but is rather a principle of general

[190] Peter Orebech *et al.*, '*The Role of Customary Law in Sustainable Development*' (Cambridge University Press 2005) 19.
[191] Higgins R, '*Problems and Process: International Law and how we use it*' (Clarendon Press Oxford, 1994) 10.
[192] E. Brown Weiss, '*Environmentally Sustainable Competitiveness: A Comment*' (1993) 102 Yale L.J. 2123.
[193] Vaughan Lowe, (n. 139) at 24.

international law which affects all areas of international law, including international economic law and international environmental law[194] through harmonization or reconciliation.[195]

The concept of sustainable development has produced several principles of international law, reiterating the need for the concept to form the basis of laws on sustainability. Such principles appeared in international law as far back as 1968 when the African Convention on the Conservation of Nature and Natural Resources[196] made provision for conservation of natural resources and the taking into consideration of ecological, social, and economic factors in all development plans by parties to the convention.[197] Sustainable development principles reverberate through the length and breadth of Agenda 21, which emerged at the Rio Earth Summit of 1992, especially Chapter Four on sustainable consumption patterns. These principles were later included in the United Nations Framework Convention on Climate Change and the Kyoto Protocol, making them to become enforceable by member countries. The preamble to the Marrakech Agreement of 1994,[198] which established the World Trade Organisation, creates the need for parties to allow for the optimal use of world resources in trade relations, in accordance with the objective of sustainable development.[199]

The International Law Association, through its Committee on the Legal Aspects of Sustainable Development, through its New Delhi Declaration,[200] noted that the concept of sustainable development has been amply recognized in various national and international legal instruments. A draft International Covenant on Environment and Development was launched at the UN Congress on Public International Law on March

[194] Dire Tladi (n. 152) at 107.
[195] Ibid 108.
[196] CAB/LEG/24.1. Available at http://www.au.int/en/sites/default/files/treaties/7763. Accessed on 5 May 2013.
[197] http://au.int/en/sites/default/files/AFRICAN_CONVENTION_CONSERVATION_NATURE_NATURAL_RESOURCES.pdf accessed on 5th May 2013.
[198] 1869 UNTS 299; 33 ILM 1197 (1994).
[199] http://treaties.un.org/untc/Pages//doc/Publications/UNTS/Volume%201867/volume-1867-I-31874-English.pdf accessed on 5th May 2013.
[200] ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development, 2nd April, 2002. Available at http://cisdl.org//tribunals/pdf/NewDelhiDeclaration.pdf accessed on 5th May 2013.

13, 1995.[201] Article 1 of the fourth edition of the draft states its objective as the provision of a comprehensive legal framework with the aim of achieving environmental conservation as an indispensable foundation for sustainable development.[202] A quick review of the draft reflects a document that is still in the process of evolution. For instance, Article 32 on Consumption and Production Patterns provides that 'parties shall reduce and seek to eliminate unsustainable patterns of consumption and production. But Article 59, which provides for offenses, appears not to make any definite provision for penalties for failure to ensure sustainability in consumption.

The draft Covenant (discussed in detail in Chapter Nine) however marks a significant step in the formal legalization of the principles of sustainable development since its adoption by UNCED, especially in the area of sustainable energy consumption.[203] Robinson believes it is one of the measures that the United Nations Commission on Environment and Development proposed for implementing Agenda 21 as expressed in Chapters 38 and 39 which call for more laws to guide and accelerate sustainable development.[204]

## 3.7 Rio Declaration and Agenda 21

The Expert Group Meeting on Identification of Principles of International Law for Sustainable Development agreed that the Rio Declaration and Agenda 21 provided the essential basis for identifying and assessing principles and concepts of international law for sustainable development.[205] Also, Silveira describes both the Rio Declaration and Agenda 21 as the fundamental instruments for sustainable development which, though not legally binding, have political and moral weight among member states of the United

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[201] http://www.uncsd2012.org/content/documents/IUCN%20Intl%20Covenant%20on%20Env%20and%20Dev%20EPLP-031-rev3.pdf accessed on 6th May 2013.

[202] The 4th edition was conveyed to the member states of the United Nations on September 22, 2010 (n. 14).

[203] Priscilla Schwarz (n. 169) at 143.

[204] Nicholas A. Robinson, ' *"Colloquium: The Rio Environmental Law Treaties IUCN's Proposed Covenant on Environment and Development*' (1995-1996) 13 Pace Envtl. L. Rev. 133 at 146.

[205] Meeting held at Geneva, Switzerland on September 26-28, 1995 http://www.un.org/documents/ecosoc/cn17/1996//background/ecn171996-bp3.htm accessed on 6th May 2013.

Nations, and also address the full range of legal principles to reach sustainable development.[206] Trindade has observed that the concept of sustainable development acts as a bridge between human rights law and international development law as it protects both the people's rights to a healthy environment and development.[207] This link between development and the environment is the spirit behind the Rio Declaration. The balancing of economic and environmental rights in practice however remains a challenge. The Rio Declaration has been viewed as a transitional phase from international economic law and international environmental law to an international law of sustainable development.[208]

The Rio Declaration of 1992 on environment and development may have created a legal basis for international cooperation on sustainable development as it has been the basis of decisions made by courts and organisations on critical energy issues. Boyle and Freestone observed that many of its terms were capable of being norm-creating and could lay down parameters for further development of the law.[209] For instance, in line with principle 17 of the Rio Declaration, the World Bank mandates the conduct of Environmental Impact Assessment (EIA) in accordance with its operational guidelines before agreeing to fund energy projects.[210]

Article 3 of the Rio Declaration reflects the principles of inter and intra-generational equity. However, while the issue of legal representation to protect the interest of the present generation may not appear to be contentious, such an issue with respect to future generations has attracted wider interest, including a deliberation on the issue in the case of *Oposa v. Factoran*.[211] In that case, the Philippine Supreme Court permitted a class action brought by some Pilipino children acting as representatives for themselves and for future generations. The court expressly considered the issue of

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[206] Mary Pat Williams Silveira, '*International Legal Instruments and Sustainable Development: Principles, Requirements and Restructuring*' (1995) 31 Willamette Law Review 241.
[207] Antonio Trindade, '*Environment and Development: Formulation and Implementation of the Rights to Development as a Human Right*' in Antonio Trindade, *Human Rights, Sustainable Development and the Environment*, (1992) 43.
[208] Sands (n. 160) at p. 303.
[209] Alan Boyle and David Freestone eds. (n.139) at pg. 3.
[210] www.worldbank.org accessed on 10 May 2013.
[211] G.R.No. 101083. (A case from the Phillipines).

intergenerational responsibility and held that the plaintiffs had *locus standi*. Arguing in support of this obligation, Boyle and Freestone cited the example of English Trust Law which permits legal representation for unborn children to show that the principle is not entirely new.[212]

Article 4 of the Rio Declaration encompasses the Integration Principle which is at the heart of the concept. It seeks to eliminate the polarization existing between the economic, social and environmental sectors of sustainable development, making it to be an integral aspect of the practice of international sustainable development law.[213] This principle of integration is, for instance, manifested in the various laws making environmental impact assessment mandatory before economic development projects are carried out. Article 8 of the Rio Declaration seems to further elucidate on the integration principle by stating that, to achieve sustainable development and a higher quality of life for the people, states must reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies. In other words, while ensuring a higher quality of life for the people, there must also be environmental conservation. One is not superior to the other. This duty is vital towards ensuring a sustainable energy policy for Europe and is reflected in treaties such as the Energy Charter Treaty. Article 19(10) of the treaty provides as follows:

> In pursuit of sustainable development and taking into account its obligations under those international agreements concerning the environment to which it is party, each Contracting Party shall strive to minimize in an economically efficient manner harmful environmental impacts occurring either within or outside its area from all operations within the energy cycle…

Article 27 of the Rio Declaration mandates states and people to cooperate in the area of development of international law in the field of sustainable development. The Foundation for International Environmental Law and Development (FIELD) has tried to

[212]Alan Boyle *et al*. (n. 139) at 14.

[213] Marie-Claire Cordonier Segger, *Significant Developments in Sustainable Development Law and Governance: A Proposal* (2004) 28 Natural Resources Forum 61-74 at 64.

work with legal experts to identify the legal issues that can be used as a basis for development of this law.[214] It was agreed that the concept has legal implications which can be equated with human rights, meaning that all economic activities are required to be subjected to review, failure of which may lead to legal action.[215] This is an affirmation of the observation of Trindade above.[216] The Brundtland Report also talks about the need for states to recognize the rights of present and future generations to an environment adequate for their health and well-being.[217] The duty to "recognize" such rights could mean that they are existing fundamental rights. Todd Adams in fact, believes sustainable development as postulated in the Brundtland Report builds primarily on common, natural law tradition of Anglo-American human rights law.[218] He further observed that the usage of the words: 'countries must recognize' in the Brundtland Report shows that such rights and duties already existed.[219] These rights form part of the basis for social acceptance of renewable energy technologies, an issue examined in chapter seven.

If we agree that failure to ensure sustainable development has legal implications similar to the breach of fundamental rights as stated by FIELD, then the following issues can be raised and need to be addressed before the concept can be said to have such a legal implication:

- Whose rights are infringed upon and whose rights are being protected in the enforcement of sustainable development?

- If the rights to be protected are those of future generations, can the law legislate against such anticipatory rights? Who enforces such rights on their behalf, bearing in mind the provisions of Paragraph Six of the Preamble to the Charter of

[214] Mary Pat Williams Silveira and Barbara Ruis, '*International Law for Sustainable Development: An Attempt at Definition*' (1996) 2 NAFTA Law and Business Review AM 12 at 15.
[215] Ibid.
[216] n. 207.
[217] World Commission on Environment and Development (Brundtland Report). Article 97 of Chapter 1 (Providing the Legal Means). Also in Article 80 of Chapter 12.
[218] Todd B. Adams, '*Is there a Legal Future for Sustainable Development in Global Warming? Justice, Economics, and Protecting the Environment*' (2003-2004) 16 Geo. Int'l Envtl. L. Rev. 77 at 79.
[219] Ibid 86.

Fundamental Rights of the EU which provides that enjoyment of the rights entails responsibilities and duties to future generations?[220]

- In the efforts to ensure sustainability in energy consumption, who is to be penalized for failing to ensure sustainability? Is it the state that has sovereignty over its resources or the oil and gas companies that have legal exploration and production rights over oil fields by virtue of Joint Venture Agreements, Production Sharing Contracts, Oil Mining Leases and other legal covenants? Or is it the final consumer who is already battling to pay his rising energy bills?

On the first issue, every individual that may be reasonably affected by resource depletion may have the right to enforcement as guaranteed under the Universal Declaration on Human Rights. In *Powell & Rayner v. United Kingdom*,[221] a claim was brought before the European Commission of Human Rights under the European Convention on Human Rights[222] for environmental violation. In Van Dyke's view, this case highlights the recognition of the fact that individuals could bring a claim for violation of environmental rights at the European Court of Human Rights.[223] Pereira and Gough observed that there is a growing conception of sovereignty over natural resources that recognizes the rights of non-state actors over the rights of states on such resources.[224] These rights extend to future generations by virtue of the concept of sustainable development and the decision in *Oposa v. Factoran*.[225] On the second issue which is the protection of the rights of future generations, it has been observed that such rights are legal rights made enforceable through legal obligations and principles and requiring a representative to ensure that such rights are upheld on behalf of future

[220] Proclaimed on December 7, 2000. Available at http://www.ec.europa.eu/justice_home/unit/charte/index_en.html accessed on 13 May 2013.
[221] (1990) 12 E.H.R.R. 355.
[222] (ECHR) Art. 3 1950.
[223] Brennan Van-Dyke, '*A Proposal to Introduce the Right to a Healthy Environment into the European Convention Regime*' (1994) 13 VA. Envtl. L.J. 323 at 329.
[224] Ricardo Pereira and Orla Gough, '*Permanent Sovereignty over Natural Resources in the 21st Century: Natural Resource Governance and the Right to Self-Determination of Indigenous Peoples under International Law*' (2013) Vol. 14(2) Melbourne Journal of International Law 451-495.
[225] n. 211.

generations.[226] Legal representation may be acquired by interested parties as recognized in the case of *Oposa v. Factoran*.[227]

Furthermore, Article 2 of the report published in 1987 by a group of legal experts commissioned by the Brundtland Commission to identify the legal principles of sustainable development, provides that states have the duty to conserve and use the environment and natural resources for the benefit of present and future generations.[228] The Report, while identifying the legal principles of sustainable development, provides in Article 1 that humans have a fundamental right to an environment adequate for their health and well-being. The WCED later proposed a convention on environment and development on the basis of those principles, suggesting the year 1988 for its adoption, but it never materialized.[229] In any case, the Charter of Fundamental Rights of the European Union, which recognizes the rights of future generations, has become law by virtue of the coming into force of the Treaty o Lisbon in 2009.[230]

On the third issue, energy consumption standards tend to be established under voluntary legal frameworks and market-based schemes. Neither is there any international law that penalizes such. However, most of the economic instruments used to internalize external environmental costs are based on legal instruments. While it may appear that humans have fundamental and legally enforceable rights to a healthy environment, Fuentes has however cautioned against too much emphasis on such rights as they may tip the balance in favour of the environmental aspect of the concept

[226] Kenneth F. McCallion and H. Rajan Sharma, '*Environmental Justice Without Borders: The Need for an International Court of the Environment to Protect Fundamental Environmental Rights*' (2000) 32 Geo. Wash. J. Int'l. L. & ECON. 351.
[227] n. 207.
[228] R.D. Munro and J.G. Lammers eds, *Environmental Protection and Sustainable Development: Legal Principles and Recommendations*. (Dordrecht. Nijhoff 1987).
[229] Lothar Gundling, '*Our Responsibility to Future Generations*' Vol. 84 No. 1 (1990) The American Journal of International Law, 207 at 208-209.
[230] European Commission, '*EU Charter of Fundamental Rights*' <ec.europa.eu/justice/fundamental-rights/charter/index_en.htm> accessed on 30 March 2016.

of sustainable development at the expense of the social or economic aspect.[231] He stated that:

> The notion of environmental rights may contradict the very idea of sustainable development, shifting the balance in favour of the protection of the environment and pushing development aspects into the background.

It may be said that Fuentes was looking at the concept from only one angle, and that, while principle 1 of the Rio Declaration seeks to support human rights, principle 2 of the same document supports economic development as long as it is sustainable. Principle 2 will therefore appear to address Fuentes' concern about a legal rights holder accepting a compromise on economic development. John Lee has however observed that acceptance of Principle 1 of the Rio Declaration by most nations through various avenues such as the 1994 U.N. Conference on Population and Development and the 1995 World Summit for Social Development is evidence of widespread and consistent state practice which can contribute to the creation of a right to an adequate resource base as a principle of customary international law.[232]

One final conclusion on the Rio Declaration is the observation by Pallemaerts that the Rio Declaration, particularly Article 15 on the precautionary principle, has conferred on economic growth a new ecological legitimacy, making it to acquire a normative character within an international instrument relating to the environment.[233] Article 15 of the Rio Declaration provides for the precautionary principle, which was recognized by the court in the case of *Hungary v. Slovakia (Gabcikovo-Nagmayaros Case).*[234] In addition to the concept of sustainable development,[235] which the court referred to, Vice

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[231] Ximena Fuentes, '*International Law-making in the Field of Sustainable Development: The Unequal Competition between Development and the Environment*' (2002) International Environmental Agreements: Politics, Law and Economics, 109 at 125.

[232] John Lee, *The Underlying Legal Theory to Support a Well-Defined Human Right to a Healthy Environment as a Principle of Customary International Law*. (2000) 25 Colum. J. Envtl. L. 283 at 308-309.

[233] Marc Pallemaerts, '*International Environmental Law in the Age of Sustainable Development: A Critical Assessment of the UNCED Process*' (1995-1996) 15 J.L. & COM, 623 at 633-634.

[234] (1997) ICJ Reports 7.

[235] Roberto Andorno, '*The Precautionary Principle: A New Legal Standard for a Technological Age*' (2004) Vol. 01 JIBL at http://www.ethik.uzh.ch/static/ibme/downloads/publicationen//andorno/Andorno-Precautionary_Principle.pdf accessed on 11th May 2013.

President Weeramantry, in that case, described the principle as one that has been accepted worldwide.[236] Economic growth is therefore seen as being fundamental to the environment as most environmental problems are, in any case, attributable to underdevelopment, especially in developing countries.[237] Boyle observed that the purpose of Article 15 is to make a greater allowance for uncertainty in the regulation of environmental risks and the sustainable use of natural resources.[238]

On its part, Agenda 21 contains explicit references to several international legal instruments, and its implementation implies compliance with these legal instruments.[239] It is however observed that the Rio Declaration and Agenda 21 were drafted with climate change issues in mind. For instance, in the Rio Declaration, only Principle 8 refers to the obligation by states to reduce and eliminate unsustainable patterns of production and consumption. All the other principles in the declaration had the protection of the environment in mind. However, Agenda 21 appears to have made some provisions for sustainability in energy consumption in Articles 4 and 9, but they both have climate change considerations as a basis.

Luff observed that the obligations specified under the Rio Declaration, Agenda 21, and other policy guidelines such as the 1994 Programme of Action of the International Conference on Population and Development have been accepted by states and are often implemented in national legislation or regional instruments, and are therefore emerging international customs.[240] In addition, Ward observed that adoption of the Rio Declaration and Agenda 21 at the 1992 Earth Summit represented the first steps toward codifying the emerging international consensus on sustainable development.[241] Furthermore, on the issue of the Rio Declaration and Agenda 21 being classified as

[236] Antoinette Hildering, *International Law, Sustainable Development and Water Management*. (Eburon Academic Publishers 2004) 34.
[237] Preamble 4, Stockholm Declaration, 1972.
[238] Alan Boyle (n. 168) at 129.
[239] Mary Pat Williams Silveira *et al* (n. 214) at 242.
[240] David Luff, '*An Overview of International Law of Sustainable Development and a Confrontation Between WTO Rules and Sustainable Development*' (1996) 1 Editions BRUYLANT, Bruxelles REVUE BELGE DE DROIT INTERNATIONAL 104.
[241] W. Robert Ward, '*Man or Beast: The Convention on Biological Diversity and the Emerging Law of Sustainable Development*' (1995) 28 Vand. J. Transnat'l L. 823 at 829.

"soft law" which may not be binding on participating countries, a solution to this may be found in the observation of Charles Davies *et al*. They stated that, ideally, such 'soft laws' eventually develop into firmer customary laws or norms as they evolve and as states act to implement them.[242]

## 3.8 Sustainable Development Principles under EU Law

A quick review of the evolutionary phase of EU laws will reveal the gradual integration of the principles of the concept of sustainable development in EU Policy as a whole. Article 174 of the Maastricht Treaty made provision for the precautionary principle, which is also reflected in principle 15 of the Rio Declaration.[243] Article 174(1) also provides that part of the objectives of community policy on the environment shall be the prudent and rational utilization of natural resources. The Treaty of Amsterdam of 1997, which also focused on the careful use of resources, determined in its Article 1(2) that sustainable development would be taken into consideration in the promotion of economic and social progress for the people.[244] Article 2 of the EC Treaty also provides as follows:[245]

> The Union shall set itself the following objectives:
>
> - To promote economic and social progress and a high level of employment and to achieve balanced and sustainable development, in particular through the creation of an area without internal frontiers…

[242] Charles Davies, Susan Hoban and Braden Penhoet, '*Moving Pictures: How Satellites, the Internet, and International Environmental Law can help Promote Sustainable Development*' (1998-1999) 28 Stetson L. Rev. 1091 at 1096.

[243] Treaty on European Union, Together with the Complete Text of the Treaty Establishing the European Community (Maastricht Consolidated Version) (1992) 92/C 224/01.

[244] Treaty of Amsterdam. Amending the Treaty on European Union, the Treaties Establishing the European Communities and Certain Related Acts. (1997) 97/C 340/01.

[245] Consolidated Versions of the Treaty on European Union and of the Treaty Establishing the European Community. (2006) C 321 E/1.

Also, Article 2(3) of the Treaty of Lisbon provides as follows:[246]

> The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth …

The Charter of Fundamental Rights of the EU recognizes the rights of future generations, the charter itself having the force of law by virtue of the 2009 Lisbon Treaty. What can be deduced from all these instruments is that the principles of the concept of sustainable development have become widely recognized within the EU. In addition to their recognition in several judicial decisions, they can form an appropriate legal basis for laws dedicated to sustainable energy consumption.

## 3.9 Journey to Legal Status

The evolution of the principles of the concept of sustainable development into legal principles is a journey ongoing. This may be due in part to its nature as a multi-dimensional concept which encompasses both the social, economic and environmental dimensions to development. Segger defined sustainable development law as a body of international legal principles which address the areas of intersection between international economic law, international environmental law and international social law.[247]Lowe referred to the concept as a 'meta-principle', pushing and pulling the boundaries of true primary norms when they threaten to overlap or conflict with each other.[248] Boyle also referred to it as a 'meta-principle' guiding other norms referred to as 'true primary norms'.[249] He however agreed that the concept of sustainable

[246] Treaty of Lisbon. Amending the Treaty of the European Union and the Treaty Establishing the European Community. (2007) 2007/C 306/01.
[247] Marie-Claire Cordonier Segger, (n. 213).
[248] Lowe V. (n.139) at 31.
[249] Alan Boyle (n. 168) at 33.

development is still in transition and it may take a while before it becomes authoritative enough to be considered strictly on its merits by the law courts.[250]

In considering the concept as a legal principle, Ruhl has also raised the issue of an appropriate standard of behaviour needed to make it a principle binding on all.[251] However, generating an appropriate standard of behavior that cuts across the social, economic and environmental variables that make up the concept, he observed, would be difficult. Possibly as a way out, Bosselmann suggests that we should lay less emphasis on the holistic concept of sustainable development and lay more emphasis on the 'sustainability' aspect of the concept which qualifies the social, economic and environmental systems that make it up. It is this core word 'sustainability that carries normativity and meets the standards of a legal principle.[252] It is that core word that flows through to make the entire concept of sustainable development to be normative to justify its classification as a legal principle.[253]

One such sustainability standard which permits economic activities to go on provided environmental and social considerations are taken into consideration is exemplified in the Environmental Impact Assessment (EIA), which Robinson describes as the most expansive and extensively enacted system of sustainability.[254] In the EU, Council Directive 97/11EC (which amended Directive 85/337/EEC) made it mandatory to conduct an EIA before oil and gas exploration activities are carried out.[255] Countries are now under an international legal obligation to conduct EIAs if their proposed activities may have an effect beyond their borders.[256]

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[250] Ibid.

[251] J.B. Ruhl, *Sustainable Development: A Five-Dimensional Algorithm for Environmental Law*. (1999) 18 Stan. Envt. Law Journal 31 at 35-36.

[252] Klaus Bosselmann (n. 159) at 53.

[253] Klaus Bosselmann (n. 159) at 56.

[254] Nicholas A. Robinson, '*Comparative Environmental Law Perspectives on Legal Regimes for Sustainable Development*' (1998) 3 Widener L. Symp. J. 247 at 262.

[255] See Article 4 of the Directive with its Annex 1 http://ec.europa.eu/environment/eia/full-legal-text/9711.htm accessed on 22nd May 2013.

[256] Charles E. Di Leva, '*International Environmental Law and Development*' (1998) 10 Geo. Int'l. Envt'l. L. Rev. 501 at 522. See also the case of Argentina v. Uruguay (Pulp Mills Case) (No. 2010/10.) (2006) ICJ Report 113 Paragraph 119-122 provides the most authoritative statement of the customary obligation to undertake EIAs in transboundary contexts.

The principles of inter and intra-generational equity and the precautionary principle have particularly become pillars of the concept of sustainable development and have found recognition in judicial decisions and treaties. They are the most powerful reflection of the concept as a legal principle which forms the basis of such decisions and laws. For instance, in *Afton Chemical Limited v. Secretary of State for Transport* (*Afton Chemical Case),*[257] the ECJ held that the EU legislature, in utilizing the precautionary principle, may take protective measures without having to wait for concrete proof. In Canada, the precautionary principle was recognized as a principle of environmental law in *114957 Canada Ltee (Spraytech, Societe d'arrosage) v. Hudson*[258]

Attempts to codify a single law on sustainable development may not be necessary after all. Demonstration of an act of sustainability cannot be attributed to one source of law. Even the international environmental law existing before the evolution of sustainable development had several sources. Today, there are several international instruments of global application which define the rights and duties of countries in environmental matters.[259] The law on sustainable development can therefore still be validly asserted despite the fact that it is present in different sources in the form of principles. These principles may however be utilised to evolve a legal framework on sustainable energy consumption with appropriate sanctions and duties.

Furthermore, there is an apparent evolution of international environmental law into international sustainable development law. In line with Resolution 44/228 of the UN General Assembly, one main objective of the Rio 1992 Conference was the further development of international environmental law.[260] This much was reflected in Articles 10, 11 and 27 of the Rio Declaration. It can thus be said that what used to be known as international environmental law is gradually evolving to become international

[257] C-343/09. ECJ.
[258] (2001) 2 S.C.R. 241.
[259] Max Valverde Soto, '*General Principles of International Environmental Law*' (1996-1997) 3 ILSA J. Int'l & Comp. L. 193 at 194.
[260] G.A. Res. 288. U.N. GAOR 44th Sess. 85th Plen. Mtg. 1.15(d), U.N. Doc. AIRE 5144/228 (1989).

sustainable development law. At the Earth Summit of 1992, the concept of sustainable development was adopted as the new paradigm for international environmental law.[261]

Also, the 'Green Economy' has re-defined the concept of growth in line with the concept of sustainable development. A green economy is an economy that is low carbon, resource-efficient and socially inclusive.[262] While the prevailing economic growth model focuses on increasing GDP above other goals,[263] a green economy promotes a triple bottom line through the advancement of economic growth, environmental and social well-being.[264] At the Rio+20 United Nations Conference on Sustainable Development of 2012, the 'Green Economy' was approved by the Heads of State.[265] It was stated that the 'green economy' promotes a triple bottom line through the advancement of economic growth, environmental and social well-being.[266]

The 2016 Global Green Economy Index (GGEI) which measures green performance in countries, shows an appreciable improvement in the performance of some EU countries.[267] Countries with a high reliance on fossil fuel extraction and export performed poorly in the GGEI. It may then be argued that the 'green economy' offers a new angle to the definition of the concept of sustainable development which emphasizes sustainability in energy production and consumption.

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[261] Anita M. Halvorssen, '*International Law and Sustainable Development – Tools for Addressing Climate Change'* (2010-2011) 39 Denv. J. Int'l & Pol'y 397 at 402.

[262] United Nations Environment Programme, 'Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication' (2011). Available at www.unep.org/greeneconomy. Accessed on 18 October 2016.

[263] Manish Bapna and John Talberth, 'Q&A: What is a Green Economy?' (World Resources Institute, April 05, 2011). Available at wri.org/blog/2011/04/gg-what-green-economy-?). Accessed on 18 October 2011.

[264] Ibid.

[265] UNEP News Centre, 'Inclusive Green Economy Given Go Ahead by Heads of State at Rio+20. (Friday June 22, 2012. Available at unep.org/newscentre/Default.aspx?DocumentsID=2688&ArticleID=9195&=en. Accessed on 18 October 2016.

[266] Ibid.

[267] United Nations Environment Programme – Inclusive Green Economy, 'Global Green Economy Index is out and Sweden Tops the List'. Available at web.unep.org/greeneconomy/news/global-green-economy-index-out-and-sweden-tops-list. (2016). Accessed on 18 October 2016.

## 3.10 Conclusion

It has been shown in Chapters Two and Three that sustainable development is a modern reflection of the theory of obligation to future generations. The obligations are backed by theories such as aspects of the social contract theory and Rawls' theory of justice. These theories have formed the basis of legal principles that make up the concept of sustainable development. The concept has been examined in this chapter to determine its legal character. It can therefore be said that sustainable development is a concept made up of legal principles, and is a solid foundation for any evolving legal framework on sustainable energy production and consumption.

There was a need to determine whether the legal principles of the concept of sustainable development can be found in conventions or treaties and judicial pronouncements or whether such legal basis can be found in customary international practice. The legal principles of the concept have been established in several international conventions and a few court cases. In addition, there is a growing international consensus on sustainability in state practice. However, the appearance of the principle in treaties/conventions has been couched in non-binding, soft law form. Also, in the absence of binding treaty obligations, there has also been a dearth of judicial decisions upholding the general principles of soft law instruments such as the Rio Declaration and Agenda 21. Cases such as that of *Oposa v. Factoran* are few and far between; and in Europe, the principles enunciated in the case are yet to be recognized.

Gonthier observed that the broad and complex nature of the concept calls for legislation drafted in broad terms in order to effectively encompass its object, leaving to the courts the important task of defining its application.[268] The soft law provisions of documents such as the Rio Declaration and Agenda 21, although strong foundations for the march towards sustainability in energy consumption, are not enough. They are however a strong evidence of *opinio juris* or state practice that provide the foundation needed for the legal framework on sustainability in energy production and consumption. Rogers *et*

[268] Charles Gonthier, '*Sustainable Development and the Law*' (2005) 1 McGill Int'l J. Sust. Dev. L. & Pol., 11 at 14.

*al*. however suggest that international law appears to require states and international bodies to take account of the objectives of sustainable development and to establish appropriate processes for doing so.[269] Such conduct by states can therefore be subjected to judicial review by the courts in line with earlier suggestions by Boyle and Freestone.[270]

Nevertheless, borrowing from Boyle and Freestone,[271] it can be said that the normative value of sustainable development derives from its wide acceptance by the global community through its incorporation in various treaties and conventions. Segger *et al* also said that sustainable development derives a significant amount of its normative power from its negotiated, incremental acceptance among states and a wide variety of other actors and interest groups.[272] It has therefore become part of international law by virtue of its gradual emergence by mutual consensus,[273] in addition to the fact that it is gradually becoming a necessity to the evolution of international law.[274]

The gradual emergence of the concept by mutual consensus has culminated in its becoming the new standard for formulating regulations governing all forms of economic development, including the extractive industry of which the oil and gas sector is one.[275] This research seeks an effective legal framework on sustainability in energy production and consumption as part of EU sustainable energy policy. The legal framework needs to be based on a legal principle that is both normative and evidence of state practice. The concept encompasses several critical legal principles which form the foundation on which such a legal framework can be based. The concept, apart from being a conceptual framework for the development of renewable energy technologies, is also a legal principle on which a legal framework for their development can be based. In

[269] Peter P. Rogers, Kazi F. Jalal and John A. Boyd, *An Introduction to Sustainable Development* (Glen Educational Foundation Inc., 2008).
[270] Alan Boyle (n. 139).
[271] Alan Boyle (n. 139) at 21.
[272] Marie-Claire Cordonier Segger, Ashfaq Khalfan and Salim Nakjavani, '*Weaving the Rules for our Common Future: Principles, Practices and Prospects for International Sustainable Development Law*' (2002) <http://cisdl.org/wtr/pdf/WeavingtheRulesOct2002.pdf> 20 accessed 25 July 2013.
[273] W. Robert Ward (n 241).
[274] Ibid.
[275] George (Rock) Pring, James Otto and Koh Naito, '*Trends in International Environmental Law Affecting the Minerals Industry*' (1999) 17 J. Energy & Nat. Resources L. 39 at 41.

conclusion, the concept of sustainable development can be said to be a legal principle that influences judicial decisions, existing and proposed laws in the area of energy sustainability.

# CHAPTER FOUR

# GENERAL OVERVIEW OF AN INADEQUATE/FRACTURED SUSTAINABLE ENERGY POLICY IN THE EU

## 4.1 Introduction

Renewable energy technologies (whose development with the aid of legal instruments are examined in detail in chapter eight) are developed within the umbrella of EU energy policy (albeit sustainable energy policy). This chapter examines the efforts that have been made in recent years within the EU towards ensuring sustainability in energy production and consumption, in fulfilment of the obligation to future generations. In doing this, the role of the legal instruments put in place to support the development of renewable energy technologies will be highlighted. It will however be revealed that, though these legal instruments have done a lot, there are still areas of concern. The conclusion will be that current efforts are in favour of conventional energy sources to the detriment of renewable energy technologies.

The International Renewable Energy Agency (IRENA) stated that most of the literature on evaluating the effectiveness of policy is concerned with measuring and benchmarking the outcomes renewable energy policies have delivered.[276] It is argued in the thesis that the outcome of EU policies on renewable have been influenced by certain factors. Therefore, in determining the inadequacy or effectiveness of the current energy policy in this chapter, the following issues are discussed in the thesis:

- Integration of climate change and energy policies, with challenges arising out of the conflicting goals of the two aspects of sustainability.
- Subsuming the development of renewable under a general energy legal framework, with inadequate focus on renewable energy sources.

[276] UK Energy Research Centre and International Renewable Energy Agency, '*Evaluating Renewable Energy Policy: A Review of Criteria and Indicators for Assessment*' (IRENA, January 2014) at p. 7. Available at http://www.irena.org/documentdownloads/publications/evaluating-re-policy.pdf. Accessed on 22 November 2016.

- The extent of implementation of existing enforcement mechanisms in relation to the development of renewable energy technologies.

The history of energy policy for the EU, and indeed the very idea of a European Union, can be traced to the formation of the European Coal and Steel Community (ECSC), established by the Treaty of Paris in 1951, and the European Atomic Energy Community (EURATOM), established by the EURATOM treaty of 1957.[277] It can therefore be said that energy has been a core factor in the history of the EU. However, the element of sustainability can be said to have crept into European energy policy following the Arab-Israeli crisis of 1973. The oil embargo imposed by Arab states in the aftermath of the crisis led to severe disruption in energy supplies, prompting industrialized nations under the umbrella of the International Energy Agency (IEA) to take urgent steps to address issues of energy supply and consumption.[278] Furthermore, as pointed out in Chapter Two (2.2), the crisis led to a realization of the fact that the world system would collapse within the next century if the then existing pattern of resource consumption was sustained.[279]

It may be pointed out here that there is a growing awareness amongst both national and EU policy makers that some energy challenges can be better faced at the EU level.[280] But there is yet to be a single document encompassing EU energy policy. The energy policy has, for the most part, been discussed within the framework of the region's environmental policies, resulting in several energy policy statements called 'Green Papers' (later becoming more definitive 'White Papers') and coordinated by the European Commission.[281] This development has made the evolving legal framework to subsume renewable energy development under a general legal framework for energy security in general. There is therefore an inadequate focus on such technologies as will

[277] Thomas C. Hoerber, '*The Origins of Energy and Environmental Policy in Europe: The Beginnings of a European Environmental Conscience'* (Routledge Ltd, 2013).
[278] Emre Usenmez, '*The UK's Energy Security.*' Appearing in Greg Gordon, John Paterson and Emre Usenmez (eds.), *Oil and Gas Law: Current Practice and Emerging Trends* (2nd Edition Dundee University Press, 2011) 33-64.
[279] Adisa Azapagic, Alan Emsley and Ian Hamerton, '*Polymers: The Environment and Sustainable Development*' (John Wiley and Sons Ltd., 2003 2. Available at http//www.wileyeurope.com. Accessed on 22 February 2014.
[280] Green European Foundation, '*EU 2013 Policy Priorities: Energy*' (28 May 2013) . A Report by the Green European Foundation http://get.eu/publication/eu-2013-policy-priorities-energy/ accessed on 31 July 2013.
[281] Brenda Shaffer, '*Energy Politics'* (University of Pennsylvania Press, 2009) 128.

be shown. In addition, where there has been a focus on renewables, the focus has been on utilizing them as tools for carbon emission reduction rather than tools for achieving energy security.

## 4.2 The Legal Framework – A Historical Perspective

One distinguishing feature of EU energy policy is the great role the law has played and is still playing in its evolution. Also important is its drive towards achieving sustainability in energy generation and consumption. EU energy policy is therefore in the process of being modernized and transformed into one that is founded on sustainability. For instance, the promotion of renewable energy sources is a major pillar of European energy policy.[282] As such, Article 194(1) (b) and ( c ) of the Treaty on the Functioning of the European Union (TFEU) state some of the aims of European energy policy as ensuring the security of energy supply within the EU, promotion of sustainable energy consumption, and the development of new and renewable forms of energy.[283] Therefore, the central goals of EU energy policy as laid down in the Treaty are: security of supply, competitiveness and sustainability. However, although the Treaty itemizes the goals of EU energy policy, the region's energy policy is evolving under several legal and policy documents such as the 2009 Renewables Directive and the Third Energy Package.

### 4.2.1 The Legal Framework from 1997 - 2009

Although EU energy policy predated 1997 (particularly with the release of the 1995 White Paper entitled 'An Energy Policy for the European Union,'[284] which stated that it is only within a sound and coherent energy policy framework at the community level that

[282] David Jacobs, '*Renewable Energy Convergence in the EU: The Evolution of Feed-in Tariffs in Germany, Spain and France'* (Ashgate Publishing Ltd., 2012).
[283] Official Journal 115, 09/05/2008.
[284] COM(95) 682 final http://europa.eu/documentation/official-docs/white-papers/pdf/energy_white_paper_com_95_682.pdf accessed on 31 July 2013.

maximum benefits can be realized for all member states),[285] the year 1997 is significant for this research because sustainable development became a political and policy objective of the EU through the Treaty of Amsterdam of 1997. This objective was later manifested in the Renewables Directive of 2009, opening another chapter in the evolution of a sustainable energy policy for the EU.

In 1997, a White Paper for a Community Strategy and Action Plan, entitled 'Energy for the Future: Renewable Sources of Energy' was issued.[286] The action plan was directed toward the goal of achieving an indicative objective of 12% penetration of renewable energy in the EU by 2010. The importance of renewable energy sources was recognized as a contributory factor to the reduction of dependency on energy products and increasing security of supply. Furthermore, under its chapter three, in order to ensure a coordinated approach towards the objective of redoubling EU renewable energy sources by 2010, a campaign was proposed to promote the implementation of large scale projects in different renewable energy sectors.

In 2001, a Green Paper entitled 'Towards a European Strategy for the Security of Energy Supply'[287] was issued. It was a response to the EU's growing future dependence on external sources for energy consumption. On renewables, it was observed that their development calls for major efforts in terms of research and technological development, investment aid and operational aid.[288] It was further observed that:[289]

> Renewable sources of energy have considerable potential for increasing security of supply in Europe. Developing their use, however, will depend on extremely substantial political and economic efforts. These efforts will only succeed if they are accompanied by a real policy of demand geared to rationalizing and stabilizing energy consumption. In the medium term,

[285] Ibid 5.
[286] COM (97) 599 Final http://europa.eu/documents/comm//white_papers/pdf/com97_599_en.pdf accessed on 31 July 2013.
[287] COM(2000) 769 final http://ec.europa.eu/energy/green-paper-energy-supply/doc/green_paper_energy_supply_en.pdf accessed on 9 August 2013.
[288] Ibid 13.
[289] Ibid 41.

> renewables are the only source of energy in which the European Union has a certain amount of room for manoeuvre aimed at increasing supply in the current circumstances. We cannot afford to neglect this form of energy.

These steps culminated in the 2001 Directive on Electricity Production from Renewable Energy Sources.[290] It set indicative targets for member states of the EU on the generation of electricity from renewable energy sources. The indicative targets were not strong enough to galvanize member states into meeting 2010 set targets. In addition, it may be observed that the directive was limited only to the generation of electricity from renewable energy sources and did not address the issue of general energy consumption from renewable energy sources. The lack of progress towards achieving the 2010 targets later led to the adoption of a more comprehensive legislative framework in 2009.[291]

A major turning point in the EU's energy policy was the Brussels European Council meeting of 23-24 March, 2006. This turning point could be attributed to the fall out of the Russian-Ukrainian gas disputes of 2006[292] which severely disrupted gas supplies to Europe, and forced Europe to rethink its energy policy. Under Part Two of the document titled 'Energy Policy for Europe', technological development was recognized as one of the means towards establishing a sustainable energy policy for Europe.[293] Under paragraph 46(c), one of the main objectives is the promotion of environmental sustainability by continuing the EU-wide development of renewable energies and the implementation of the Biomass Action Plan. One of the lines endorsed for action was the strong promotion and diffusion of eco-innovations and environmental technologies

[290] Directive 2001/77/EC.

[291] Cecile Kerebel, '*Fact Sheets on the European Union*.' http://www.europarl.europa.eu/aboutparliament/en/displayFtu.html?ftuId=FTU_5.7.4.html accessed on 31 January, 2015.

[292] Andrei Belyi and Ulrich Klaus, '*Russia's Gas Exports and Transit Dispute Resolution under the ECT: Missed Opportunities for Gazprom or False Hopes in Europe?*' (2007) 25 J. Energy and Nat. Resources L. 205.

[293] http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/89013.pdf accessed on 30 July 2013.

through the Environmental Technology Action Plan[294] The plan was adopted in 2004 to promote eco-innovation and the utilization of environmental technologies.

The Renewed Strategy on Sustainable Development adopted by the European Council in June 2006 identified some key challenges facing the EU in the march towards sustainable development among which are clean energy and management of natural resources.[295] Also in 2006, a Green Paper entitled 'A European Strategy for Sustainable, Competitive and Secure Energy' introduced the element of competitiveness into the evolving energy policy. It specified three pillars of European Energy Policy, which are security of supply, competitiveness and sustainability.[296] In stating areas of priority, the document highlights the need for an open and competitive energy market to achieve sustainability in the energy sector.[297]. The Green Paper was however criticized for lacking in the drive towards the much desired sustainability it professed, with the claim that it was more about securing energy imports from outside the EU.[298] This criticism may indeed be true as can be seen in other policy documents discussed in this chapter. In any case, EU sustainable energy policy is subsumed under the general EU energy policy.

In January 2007, the European Commission came out with the document entitled 'An Energy Policy for Europe,'[299] which highlighted the point of departure for European Energy Policy as threefold: combating climate change, limiting the EU's vulnerability to imported energy sources and economic development. Under the proposed Action Plan, it was stated that:

> To achieve the strategic energy objective set out means transforming Europe into a highly energy efficient and low CO2 energy economy,

[294] Paragraph 76.
[295] http://register.consilium.europa.eu/pdf/en/06/st10/st10117.en06.pdf accessed on 27 July 2013.
[296] COM(2006) 105 final http://ec.europa.eu/energy/strategies/2006/2006_03_green-paper_energy_en.htm accessed on 27 July 2013.
[297] Paragraph 2.1.
[298] Rolf de Vos, '*European Green Paper: New Opportunities for Sustainable Energy Policies in Europe*' (2006) Vol. 7 Issue 3 Refocus 66-67.
[299] COM (2007) 1 final http://ec.europa.eu/energy/energy_policy/doc/01-energy_policy_for-europe_en.pdf accessed on 31 July 2013.

> catalyzing a new industrial revolution, accelerating the change to low carbon growth and, over a period of years, dramatically increasing the amount of local, low emission energy that we produce and use

Later in 2007, the European Council endorsed an Energy Action Plan which set the 20-20-20 targets and a 10% share of biofuels in gasoline and diesel consumption, subject to sustainable production considerations.[300] The 20-20-20 targets have the goals of achieving a 20% reduction in carbon emissions compared to 1990 levels, 20% of the energy on the basis of consumption coming from renewables and 20% increase in energy efficiency.[301] In the Action Plan (2007-2009), there was a strong focus on investments in renewable energy technologies.[302] The 20-20-20 Climate and Energy Package was eventually launched in 2008, the cardinal principles of which are 20% targets for renewables in the energy mix and a 20% target on reduction in energy consumption through energy efficiency measures.[303]

Although the Climate and Energy Package of 2008 considered energy a responsibility of member states, the Lisbon Treaty of 2009 gave new powers to the EU to act in several policy areas of great importance, including energy, making it a shared responsibility, and paving the way for a common energy policy.[304] It can be deduced from the Lisbon treaty that one of its intended effects is that it will give better opportunities than before to the development of EU policies that are supporting a transition to sustainable energy sources.[305] In essence, the main new opportunity is that the promotion of renewable energy technologies can be aims of EU policies rather than just being means to achieve other aims and objectives. The journey of the legal framework however shows that the development of renewable energy sources in the EU is being used mostly as a means to meet climate change/carbon emission reduction targets or obligations.

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[300] Helen Donoghue, '*Europe's Energy Policy: Creating* Change' (2007) 31 Fletcher F. World Aff. 165 at 168.
[301] RECS International, '*European 20-20-20 Targets*' <recs.org/glossary/European-20-20-20-targets> accessed on 5 March, 2015.
[302] Ibid 169.
[303] http://ec.europa.eu/clima/policies/package/index_en.htm accessed on 27 July 2013.
[304] Maria da Graca Carvalho, '*EU Energy and Climate Change Strategy*' (2012) 40 Energy 19 at 20.
[305] INFORSE-EUROPE, '*The Lisbon Treaty and Sustainable Energy*' (December 2010). International Network for Sustainable Energy. Available at inforse.org/europe/eu_table_lisbon.htm. Accessed on 18 April 2016.

### 4.2.2 Renewables Directive of 2009

Directive 2009/28/EC (amending, consolidating, and subsequently repealing Directives 2001/77/EC and 2003/30EC which merely set indicative targets) establishes a common framework for the promotion of energy from renewable sources.[306] It actualizes the content of the Climate and Energy Package mentioned earlier. One of the main objectives of the Directive as stated under its Preamble (1) was the control of energy consumption in Europe through the increased use of energy from renewable sources. However, it seems that the overarching philosophy behind the Directive is rooted in climate change considerations. This is because the main goal of the directive is to create a common framework for the use of renewable energy in the EU so as to limit greenhouse gas emissions and promote cleaner transport.[307] In fact, it has been stated that the 2009 Renewables Directive finds its legal basis in the environmental competence provisions of the Energy Charter Treaty (at the time the Directive was adopted) and later Article 192(1) TFEU.[308] The problem here (as will be shown in detail later under chapter 8) is that there are clashes between climate change and energy security objectives which engender opposition towards the development of renewable energy technologies. Furthermore, viewing these technologies from the angle of climate change increases the tendency to view them as tools performing a social function (carbon emission reduction) rather that a critical socio-economic-environmental function, which is energy security.

However, the Directive provides in its Preamble 2 that the use of energy from renewable sources in transport is one of the most effective tools by which the community can reduce its dependence on imported oil in the transport sector.[309] 'Effectiveness' here however requires a legal framework that gives adequate attention to the development of

[306] Philip Lowe, '*Regulating Renewable Energy in the European Union*' (2010) Renewable Energy L. & Pol'y Rev. 17.
[307] '*Promotion of the use of Energy from Renewable Sources*' <eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV%3Aen0009> accessed on 5 March, 2016.
[308] Marjan Peeters, '*Governing Towards Renewable Energy in the EU: Competencies, Instruments, and Procedures*' (2014) 1 Maastricht Journal 39 at 42.
[309] 5.6.2009, Official Journal of the European Union L 140/16.

renewable and will not subsume them under the general energy policy framework. Effectiveness also requires adequate enforcement of targets set under the existing legal framework, an issue which is examined under Chapter Eight (Article 8.2), with an admission by the EU that enforcement of some of the targets sets might be difficult to achieve.

Article 22 particularly provides:

> The achievement of the objectives of this Directive requires that the Community and Member States dedicate a significant amount of financial resources to research and development in relation to renewable energy technologies. In particular, the European Institute of Innovation and Technology should give high priority to the research and development of renewable energy technologies.

Under Article 39(2), each member state has a minimum annual target in the form of an indicative trajectory below which it cannot fall in the drive towards the 2020 targets. Under Article 4, member states are required to submit National Action Plans on renewable energy which are detailed road maps on how each member state expects to reach its legally binding 2020 targets for the share of renewable energy in their final energy consumption.[310] The main purpose of these mandatory national targets is to provide certainty for investors and to encourage investments in renewable energy technologies, allowing for energy production from all types of renewable sources.[311] The targets are based on final energy consumption, which avoids converting problems in view of the different energy sources.[312] Each country is expected to come up with modalities for meeting the mandatory targets, which were published in the form of National Renewable Energy Action Plans (NREAP) between July 2010 and February

[310] http://ec.europa.eu/energy/renewables/action_plan-en.htm accessed on 29 July 2013.

[311] Evanthie Michalena and Jeremy M. Hills, '*Renewable Energy Issues and Implementation of European Energy Policy: The Missing Generation?*' (2012) 45 Energy Policy 201-216.

[312] Doerte Fouquet and Thomas B. Johannson, '*European Renewable Energy Policy at Crossroads - Focus on Electricity Support Mechanisms*' (2008) 36 Energy Policy 4079-4092.

2011.[313] According to the combined NREAPs of all EU member states, the contribution of renewable energy to electricity generation by 2020 is expected to be 1217 TW h, with consumption growing from 15% in 2005 to 34% by 2020.[314]

The Directive in its Article 11 contains a very important provision which recognizes the different potentials of each country in renewable energy generation. Therefore, to enable each country meet its legally binding targets, provision is made for cooperation mechanisms between member states which allow them to agree on the extent to which one member state supports the energy generation in another and on the extent to which the energy production from renewable sources should count towards the national target of one or the other. The Swedish-Norwegian cooperation mechanism under this directive has developed a common certificate scheme effective from 2012.[315] It has reduced to a large extent the barriers that could arise from different cooperation mechanisms between the two countries.

The Renewables Directive has laid down three main cooperation mechanisms to further integrate efforts towards achieving the 2020 targets. Article 6 makes provision for statistical transfer of energy from renewable energy sources between member states based on mutual agreement. This transfer does not however affect the mandatory targets of the state making the transfer, and only becomes effective after the Commission has been notified. In a statistical transfer, an amount of renewable energy is deducted from one country's progress towards its target and added to another's. This is an accounting procedure for valuable consideration as no actual energy changes hands.[316]

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[313] L.W.M. Beurskens, M. Hekkenberg and P. Vethman, '*Renewable Energy Projections as Published in the National Renewable Energy Action Plans of the European Member States*' (2011). Energy Research Centre of the Netherlands/European Environment Agency 30 http://www.ecn.nl/docs/library/report/2010/e10069.pdf accessed on 5 August 2013.

[314] Nicolae Scarlat, Jean-Francois Dallemand and Manjola Banja, '*Possible Impact of 2020 Bioenergy Targets on European Union Land Use. A Scenario-based Assessment from National Renewable Energy Action Plans Proposals*' (2013) 18 Renewable and Sustainable Energy Reviews 595-606 at 598.

[315] Jacobsen Henrik Klinge *et al*, '*Cooperation Mechanisms to Achieve EU Renewable Targets*' (2014) 63 Renewable Energy 345-352 at 351.

[316] Cooperation Mechanisms, http://ec.europa.eu/energy/en/topics/renewable-energy/renewable-energy-directive/cooperation-mechanisms accessed on 1 February 2015.

Article 7 makes provision for member states to embark on joint projects for the production of electricity, heating or cooling from renewable energy sources. It however allows the private sector to be part of these joint projects. This is a recognition of the fact that the private sector is actually the active participant that carries out these projects, with the government merely giving policy guidance. Provision is also made for notification of the Commission of the amount of electricity produced from these joint projects. Article 11 makes provision for states to cooperate in implementing support schemes for renewable energy projects. Kitzing *et al* have observed that cooperation mechanisms could become the next trend in the development of European renewable support, stating that several cooperation activities have been announced.[317] For instance, Italy now imports electricity derived from renewable energy sources from Serbia, thereby covering part of its renewables production target as specified under the Directive.[318]

An outstanding issue on integration is the utilization of support schemes for renewable energy technologies. Since the passing of the first Renewable Energy Directive of 2001, there has been disagreement on the issue of a harmonized support scheme for the whole of Europe, with each of the key European institutions – the European Commission, the Council of Ministers and the European Parliament – having differences of opinion on the issue. In a 2005 Communication from the Commission entitled "The Support of Electricity from Renewable Energy Sources,"[319] the issue of harmonisation of the different support schemes was considered, but it was concluded that, due to widely varying potentials and developments in different member states regarding renewable energies, harmonization seems to be very difficult to achieve in the short term.[320]

Article 2(k) of Directive 2009/28/EC has given a broad definition of 'support scheme', which presupposes that there is no single EU-endorsed scheme for new sustainable energy technologies. This is in addition to Article 11 of the Directive which allows

[317] Lena Kitzing, Catherine Mitchell and Poul Erik Morthorst, '*Renewable Energy Policies in Europe: Converging or Diverging?*' (2012) 51 Energy Policy 192-201 at 199.
[318] Ibid.
[319] COM(2005) 627 final http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0627:FIN:EN:PDF accessed on 31 July 2013.
[320] Ibid 11.

member states to coordinate efforts on national support schemes. For now, the peculiar socio-political system of each member state calls for National Support Mechanisms peculiar to each state to counterbalance existing market barriers.[321] Oversight functions are carried out at the EU level.

### 4.2.3 The Legal Framework from 2010 to Present Day

It is important to start preparations for 2050 now as investors in renewable energy technology applications need stable long-term policy frameworks, some 15-20 years ahead.[322] In June 2010, EU energy and climate goals were incorporated in the Europe 2020 Strategy for Smart, Sustainable and Inclusive Growth,[323] following its adoption by the European Council. This document particularly highlights the critical role that energy plays in the march towards sustainability for the EU. In January 2011, the European Commission Communication entitled 'Renewable Energy: Progressing towards the 2020 Target',[324] while acknowledging that EU energy policy was still evolving (having started with the adoption of the 1997 White Paper), and also further acknowledging the crucial role renewable energy plays to any move towards a low carbon economy, presented an overview of the progress being made towards 2020 targets. It was observed that member states' projections showed that renewable energy will grow at a faster pace in the years up to 2020. In the heating and cooling sector, it was observed

[321] Dorte Fouquet, '*Policy Instruments for Renewable Energy – From a European Perspective*' (2013) 49 Renewable Energy 15-18.

[322] Jaap C. Jansen and Martine A. Uyterlinde, '*A Fragmented Market on the Way to Harmonisation? EU Policy Making on Renewable Energy Promotion*' (2004) Volume VIII No. 1 Energy for Sustainable Development 93-107 at 105.

[323] COM (2010) 2020 final http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF accessed on 2 August 2013.

[324] COM (2011) 31 final http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0031:FIN:EN:PDF accessed on 2 August 2013.

that biomass would remain the dominant technology, with 50% of the growth up till 2020 occurring in energy from biomass.[325]

The EU has already developed a road map for a smooth transition to a low-carbon economy by 2050.[326] Furthermore, in view of the slow pace of transposition of the 2009 Renewables Directive into the national laws of member states, a new proposal has been put forward. In the communication entitled 'A Policy Framework for Climate and Energy in the Period from 2020 to 2030,'[327] a proposal was made to suspend the implementation of mandatory national targets with effect from 2020. From 2020 onwards, a mandatory target of 27% enforceable at the EU level is planned. This is a laudable objective, but it is difficult to see how such will be implemented in the absence of provisions on sanctions in the applicable law. The ineffectiveness of the existing legal framework has led to the idea of the European Energy Union briefly examined under 4.10 below.

## 4.3 EU Internal Energy Market Policy – The Third Energy Package

At the heart of the EU's internal energy market policy is the creation of conditions for unfettered cross-border trade and investments in energy.[328] The December 2005 Communication from the Commission, entitled 'The Support of Electricity from Renewable Energy Sources' highlighted the connection between the internal energy market and renewable energy technologies, stating that such technologies provide new installations contributing to security of supply and enlarging the energy mix of electricity generators within the EU.[329] The EU Green Paper of 2006[330] on its part mentioned the development of a fully competitive internal energy market within the EU as one of its

[325] Ibid 61.
[326] COM (2011) 0885 final – 'Energy Roadmap 2050.'
[327] COM (2014) 0015.
[328] Andreas Gunst, '*Impact of European Law on the Validity and Tenure of National Support Schemes for Power Generation from Renewable Energy Sources*' (2005) 23 J. Energy & Nat. Resources L. 95 at 97.
[329] COM (2005) 627 final http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0627:FIN:EN:PDF accessed on 31 July 2013 at p. 8.
[330] (n 296).

primary objectives because of the perceived challenges facing the enlarged market from the already established national monopolies. The 2007 Communication from the Commission[331] also highlighted the criticality of the internal energy market, stating that it is vital to meeting all the EU's energy challenges. In addition, it has been observed that, for the new Renewables Directive (Directive 2009/28/EC) to deliver discernible European added value, it should explicitly build on the internal energy market.[332] It was further observed that:

> Without the benefit of the internal market, European customers would probably face a much higher financial burden in fulfilling the 20% target. Cross-border trade would also ensure that technology development is truly European and thus lead to a better utilization of renewable energy sources.[333]

In furtherance of this policy, a new Directive 2009/72/EC (the Electricity Directive) was passed (repealing Directive 2003/54/EC), which highlights the need for investments in electricity generation from renewable energy sources[334] and emphasized cross-border trade in energy.

The internal market is particularly important for the development of renewable energy technologies as the shift towards sustainability in energy consumption becomes more and more noticeable. In allowing a strong internal market within the EU, market forces will, for instance, result in a greater harmonization of renewable energy developments due to the introduction of cooperation mechanisms which would allow renewable energy produced in one country to be sold to customers in another, enabling companies to fulfill their targets through purchasing certificates elsewhere.[335] The cooperation mechanisms are provided for under the 2009 Renewables Directive. Possible conflicts and the

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[331] COM (2007) 1 final – Energy for a Changing World – An Energy Policy for Europe.

[332] CEPS Task Force Report, *Energy Policy for Europe: Identifying the European Added-Value* (Centre for European Policy Studies 2008) 61.

[333] Ibid.

[334] Paragraph 6 of the Preamble to Directive 2009/72/EC. This Directive concerns common rules for the internal market in electricity.

[335] Ute Collier, '*EU Energy Policy in a Changing Climate*' in Andrea Lenschow (ed.), *Environmental Policy Integration: Greening Sectoral Polices in Europe* (Earthscan Publications Ltd., 2002) 186.

threats they pose to the internal market in the march towards harmonization are examined in detail under chapter eight. It is however safe to say here that the 2013 Guidance of the European Commission will be of great help.[336] It provides guidance for support schemes for renewable energy technologies and cross-border cooperation in renewable energy support schemes (especially those provided for under the 2009 Renewables Directive).[337] One of the key suggestions of the guidance is that financial support for renewables should be limited to what is necessary and should aim to make renewables competitive in the market and avoid market distortions.

Inotai, on his part, stated some of the benefits of the internal energy market to harmonization of EU energy policy:[338]

a. Keener competition improves efficiency and reduces producer and consumer costs of energy.

b. Basic objectives of energy production and environmental protection can be better coordinated.

c. Joint initiatives could be implemented with lower investment costs

However, it may be observed that the journey towards a common market has been painfully slow, with monopolies still existing in most EU countries. Glachant and Ruester observed that schemes such as the cooperation mechanisms provided for under the 2009 Renewables Directive have not been utilized by member states, with the exception of a joint support scheme between Norway and Sweden.[339] They further observed that

[336] COM (2013) 7243 final (5.11.2013). Communication from the Commission Delivering the Internal Electricity Market and Making the Most of Public Intervention

[337] Marco Sencar, Viljem Pozeb and Tina Krope, '*Development of EU (European Union) Energy Market Agenda and Security of Supply*' (2014) 77 Energy 117-124 at 122.

[338] Andras Inotai, '*Towards a Common Energy Policy in the European Union?*' (2008) 8 Romanian J. Eur. Aff. 5 at 14.

[339] Jean-Michel Glachant and Sophia Ruester, '*The EU Internal Electricity Market: Done Forever?*' (2014) 31 Utilities Policy 221-228 at 228.

there have been uncoordinated national policy initiatives in the area of support for these sustainable energy technologies.[340] Their most disturbing observation was that market designs and regulation have not been adapted to suit the requirements of renewable energy technologies.[341] What may be inferred from this last point is that the internal energy market policy (like most EU Policies and regulations on energy) only has renewable energy sources as other sources of energy. The main focus is still on securing conventional energy sources like oil and gas. As such, even though EU energy policy is gradually becoming a sustainable energy policy, this transition is painfully slow. This therefore raises the issue of whether there is a need for dedicated policies and regulations for renewable energy sources (like the 2009 Renewables Directive).

## 4.4 The Legal Framework on Biofuels

While the 2009 Renewables Directive appears to have climate change/carbon emission reduction as its main goal, one major area where it makes provision for energy security considerations is in the area of utilization of renewables for transportation.[342] The EU therefore admits that, in the face of Europe's increasing dependence on fossil fuels, using biomass is one of the key ways of ensuring the security of supply and sustainable energy in the region, especially in the transportation sector.[343] In a Communication from the Commission in 2005,[344] it was observed that the technology for biomass use in residential and industrial heating is simple and cheap.[345] It was further observed that there was a need for legislation on renewable energy for the heating sector. This was subsequently done through the incorporation of biofuels in the 2009 Renewables Directive, which replaced the Biofuels Directive of 2003.

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[340] Ibid at 222.
[341] Ibid.
[342] http://europa.eu/legislation_summaries/energy/renewable_energy/127014_en.htm accessed on 5 August 2013.
[343] Ibid.
[344] COM(2005) 628 final <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52005DC0628:EN:NOT.
[345] Paragraph 2.

In a Communication from the Commission entitled 'An EU Strategy for Biofuels,'[346] it was observed that nearly all the energy used in the EU transport sector comes from oil, and that securing energy supplies for the future was not only a question of reducing import dependency but calls for a wide range of policy initiatives, including technologies. It was also observed that, while existing technologies do not at present offer cost-competitive solutions for the EU, the benefits of encouraging the development of biofuels should outweigh the cost.[347] A major feature of the document is the recognition of the need for cooperation with countries outside the EU, especially developing countries, for production of feed stock needed for biofuels. The EU Strategy for Biofuels was thereafter set out with three aims:[348]

- The further promotion of biofuels in the EU in line with the objectives of the Lisbon Strategy
- The optimized cultivation of dedicated feed stock
- Exploration of opportunities in biofuel markets outside the EU

In line with Article 19(6) of the 2009 Renewables Directive, in a 2010 Communication from the Commission entitled 'Report from the Commission to the Council and the European Parliament on Sustainability Requirements for the use of Solid and Gaseous Biomass Sources in Electricity, Heating and Cooling,' the need to incorporate sustainability requirements for biomass production in line with the requirements of the 2009 Renewables Directive[349] was reiterated. As a result, and to reduce the risk of indirect land use change arising from utilization of land for biofuel production, a proposal for amending the 2009 Renewables Directive and the Fuel Quality Directive to ensure

[346] COM(2006) 34 final http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2006:0034:FIN:EN:PDF accessed on 9 August 2013.
[347] Ibid 4.
[348] Ibid.
[349] COM/2010//0011 final <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52010DC0011:EN:NOT> accessed on 2 August 2013.

more stringent sustainability requirements are met was tabled.[350] The proposal also included plans to limit the share of biofuels from food crops to 5% of overall transport fuel.[351]

The legal element of the proposal was based on the Proposal for a Directive of the European Parliament and of the Council amending the 2009 Renewables Directive and the Fuel Quality Directive.[352] Article 3 sets a target of December 31, 2017 for the EU Commission to submit a report reviewing the effectiveness of measures introduced in this directive in limiting the indirect land-use change green-house gas emissions associated with biofuel production. The review would be based on the latest available scientific evidence. The complex structure of the bioenergy sub-sector has made it necessary to develop a focused technology strategy,[353] and there is a lot to be gained under the Strategic Energy Technology Plan discussed below.

District heating can manage the use of renewable fuels more easily, as biomass is easier to develop using district heating rather than individual heating.[354] As such, district heating and cooling plays a significant role in the supply of low-carbon heating and cooling in Europe.[355] This was why the European Commission, in the document entitled 'Cohesion Policy: Investing in the Real Economy[356] recognized the need to devote €4.8 billion to the development of renewable energies, including support for decentralized energy production and district heating.[357] The Cohesion Policy also identified the need for skills for transition to a low carbon economy, stating that the move towards a low

[350] COM (2012) 595 final. Proposal Amending the Renewable Energy Directive and the Fuel Quality Directive. http://ec.europa.eu/energy/sites/ener/files/com_2012_0595_en.pdf accessed on 23 January 2015.
[351] Ibid.
[352] 2012/0288 (COD).
[353] Kyriakos Maniatis and Stefan Tostmann, '*EU Technology Strategy on Bioenergy: From Blue-Sky Research to Targeted Technology Development*' (2010) Renewable Energy L. & Pol'y Rev. 169 at 173.
[354] COM/2005/0628 final.
[355] http://www.euroheat.org/District-Heating-Cooling-4.aspx accessed on 5 August 5, 2013.
[356] COM (2008) 876 final http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0876:FIN:EN:PDF accessed on 5 August 2013.
[357] Ibid 7.

carbon society will need to be accompanied by identification and provision of new skills for new jobs.[358] However, it did not take long for the need for a review to manifest.

In furtherance of the Cohesion Policy, Regulation (EU) No. 1300/2013[359] on the Cohesion Fund was set up to provide financial contributions to projects in the field of environment and trans-European networks. It provides in its Article 4(a)(i) for the provision of support for the promotion and distribution of energy from renewable energy sources. Under the EU Cohesion Policy of 2014-2020, the sum of EUR 351,8 billion will be made available to invest in the EU economy for delivering Euro 2020 goals, of which energy security one.[360] A major observation on the Cohesion Policy is that the development of renewable energy technologies is subsumed under a policy meant for several policy objectives, giving such sustainable energy sources far less than the attention they deserve.

## 4.5 Action Plan on Wind Energy

In the 2008 Communication from the Commission entitled 'Offshore Wind Energy: Action needed to Deliver on the Energy Policy Objectives for 2020 and beyond', it was acknowledged that wind energy would play an essential role in meeting the objectives of the new Energy Policy for Europe.[361] In fact, an analysis of the National Renewable Energy Action Plans carried out by Jager-Waldau *et al* showed that wind energy would have the highest contribution in renewable energy generation (about 41.3%).[362] Action was recommended on investments in the future competitiveness of the wind energy industry through programmes like the Strategic Energy Technology Plan discussed below. The Commission therefore planned to facilitate regional cooperation on offshore energy site and grid planning between member states, energy regulators, transmission

[358] Ibid.
[359] Regulation (EU) No. 1300/2013. Repealing Council Regulation (EC) No. 1084/2006.
[360] http://ec.europa.eu/regional_policy/what/future/index_en.cfm accessed on 20 January 2015.
[361] COM(2008) 768 final http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0768:FIN:EN:PDF accessed on 6 August 2013.
[362] Arnulf Jager-Waldau *et al,* '*Renewable Electricity in Europe*' (2011) 15 Renewable and Sustainable Energy Reviews 3703-3716 at 3707.

system operators and other relevant stakeholders.[363] This focus on offshore wind was due to the realization by the EU that the output from these offshore facilities is higher than those on land due to stronger winds and also a realization of the fact that land utilization-related issues associated with onshore facilities are less offshore.[364]

A follow up to this was Regulation EC No. 663/2009 of the European Parliament and of the Council of July 13, 2009 which established the European Energy Programme for Recovery (EEPR), to provide financial support for energy-related projects in the drive towards sustainability. Through the EEPR, support for the supply and installation of wind turbine generators, the realization of the first large size offshore wind farms (400MW) has been secured.[365] The first offshore wind electricity generated infrastructure co-financed by the EEPR was fed into the German grid in late 2010.[366] It must however be noted here that, yet again, the EEPR was designed for the energy sector in general without adequate attention being devoted to renewable energy sources.

## 4.6 Specific Laws Backed by Policy

Energy technology is vital to achieve the action plans towards 2020 and beyond, and without accelerated progress in the deployment of advanced energy technologies, it will not be possible to achieve EU targets.[367] Mallon gave a useful insight into the role policy plays in aiding renewable energy technologies when he observed that, given the manifold benefits, many might ask whether renewable energy technologies cannot find their own place in our energy systems without the assistance of policy.[368] He observed that, unlike mobile phones or early desktop computers which created new services,

[363] Ibid 10.
[364] Promotion of Offshore Wind Energy http://europa.eu/legislation_summaries/energy/renewable_energy/en0001_en.htm accessed on 6 August 2013.
[365] COM (2013) 791 final. On the Implementation of the European Energy Programme for Recovery. http://ec.europa.eu/energy/eepr/eeef/doc/com_2013_791_en.pdf accessed on 2 August 2013.
[366] Ibid.
[367] Kyriakos Maniatis *et al* (n. 353) 174.
[368] Karl Mallon, *Renewable Energy Policy and Politics: A Handbook for Decision-Making* (Earthscan, 2006) 1-2.

renewables are entering an existing market which is already occupied by an existing product – fossil fuels – which are, at the moment, cheaper, and whose prices are still the universal drivers in the energy market.[369] These polices provide a direction for legal instruments aiding the development of renewable energy technologies.

The Large Combustion Plants Directive entered into force on November 27, 2001.[370] Although it was adopted to reduce carbon emission in line with climate change targets, its effect on the conventional sources of energy is profound. The emission reduction envisaged under the directive meant that fossil fuel-sourced energy plants opting out of the directive were expected to cease operations by December 31, 2015. Article 4(4)(a) provides:

> The operator of an existing plant undertakes, in a written declaration submitted by 30 June 2004 at the latest to the competent authority, not to operate the plant for more than 20,000 operational hours starting from 1 January 2008 and ending no later than 31 December 2015

The implication of this is that, as existing power plants gradually fold up, new renewable energy technologies may have to be developed as part of the replacement to forestall an energy crisis.

The EU Emissions Trading Scheme (EU-ETS), examined in detail under chapter 8.8, has been observed to be an important demand side driver supporting the deployment of innovative renewable energy technologies, enabling them to reach markets more quickly and more economically if they are developed through collaboration at the EU level.[371] It has however been observed that while promoting renewables is not the main objective of the EU-ETS, renewables, particularly wind power, have so far been the

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[369] Ibid.

[370] Directive 2001/80/EC. http://ec.europa.eu/environment//air/pollutants/stationary/lcp/legislation.htm accessed on 2 August 2013.

[371] (2011) Renewable Energy L. & Pol'y Rev 59; See also Emmanuel Kakaras, '*European Energy Policy and Carbon-Free Electricity Generation*' in Konstantina E. Botsiou and Antonis Klapsis eds. *The Konstantinos Karamanlis Institute for Democracy Yearbook 2011* (Konstantinos Karamanlis Institute for Democracy Athens, 2011) at 163.

most efficient means of meeting the goal of the ETS.[372] It was further observed that, from the start of the EU-ETS in 2005 up till 2010, 49,702MW of new wind power capacity had been installed.[373]

In November 2007, the European Commission released "A European Strategic Energy Technology Plan (SET Plan) - Towards a Low Carbon Future " (COM (2007) 723) which identified technology as being essential to Europe achieving its energy policy objectives, noting at the same time that Europe needs a dedicated policy to accelerate the deployment and development of cost-effective low carbon technologies.[374] Furthermore, in a 2009 communication from the Commission entitled 'Investing in the Development of Low Carbon Technologies' (SET-Plan),[375] it was stated that reinventing the EU energy system on a low carbon model was one of the critical challenges of the 21st century, and technology and the efficient use of resources lie at the heart of the challenge.

The communication therefore describes the SET-Plan as the EU' response to the challenge of accelerating the development of low carbon technologies, which include renewable energy technologies, leading to their widespread market take-up.[376] It was further stated that, in implementing the SET-Plan, more time would be spent on co-investing in programmes such as the European Energy Programme, combining public resources effectively and creating flexible public-private partnerships with industry, which would be the future model for pan-European energy research cooperation.[377]

Maniatis and Tostmann, on their part identified some of the key messages of the SET Plan which they stated thus:[378]

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[372] European Wind Energy Association, *EU Energy Policy to 2020: Achieving 80-95% Emissions Reductions* (A Report for the European Wind Energy Association 2011) 27.
[373] Ibid.
[374] Franklin Kramer and John Lyman, *Transatlantic Cooperation for Sustainable Energy Security: A Report of the Global Dialogue between the European Union and the United States* (Centre for Strategic and International Studies Press, 2009) 14.
[375] COM(2009) 519 final http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0519:FIN;EN:PDF accessed on 9 August 2013.
[376] Ibid 3.
[377] Ibid 12.
[378] Maniatis and Tostmann (n. 353) at 174.

a. Energy technology is vital to achieving the targets of the 2020 Energy Action Plan

b. Current ways to develop and foster technology and bring it to the market need to be radically improved to enable the EU meet set targets

c. All stakeholders including the EU, member states, private sector and the research community have a role to play.

Ruester *et al* observed that the SET Plan has a broad nature and is not entirely focused on and aligned with more specific technology targets.[379] They proposed a revised SET Plan that allows policy makers to push needed technologies within any future context.[380] The challenge here is determining whether policy makers are not already biased towards climate change concerns in the implementation of the SET Plan.

## 4.7 Support Schemes for Renewable Energy Technologies

Most of the support schemes for renewable energy technologies in EU member states are backed by legislation. However, it must be said that EU policy on support schemes for renewable energy technologies seems to give room for the principle of subsidiarity, as efforts to evolve a common policy on such aid schemes has not met with much success. The feed-in-tariff has been popular in some countries like Germany where it has offered investors in the technologies needed stability for long term investments,[381] while tradable green certificates have been utilized in others. Jacobsson *et al* however observed that although the EU's proposal upon which Directive 2009/28/EC was based specified a tradable green certificate scheme (an opt-out clause was later imposed before the final draft was produced), it was better for the EU to develop aid schemes

[379] Sophia Ruester *et al*., '*A Post-2020 EU Energy Technology Policy: Revisiting the Strategic Energy Technology Plan*' (2014) 66 Energy Policy 209-217 at 212.
[380] Ibid at 216.
[381] Danyel Reiche and Mischa Bechberger, '*Policy Differences in the Promotion of Renewable Energies in the EU Member States*' (2004) 32 Energy Policy 843 at 847.

that would enable it to meet the immense innovation/industrialization challenge of developing a wide range of technologies utilizing renewable energy sources.[382]

Some writers are of the view that there is a need for harmonization of aid schemes within the EU as multiplicity of such aid schemes distorts the market.[383] Other writers however believe that, due to feasibility and political reasons, the imposition of a harmonised system at the EU level is improbable because they will pose serious implementation problems.[384] Furthermore, some writers believe that there is no single universally acceptable best support mechanism for the bundle of different technologies, and as such a mix of policy instruments needs to be tailored to the particular renewable energy technology and each country's specific situation in promoting the evolution of the technology from niche to mass markets.[385] The 2008 Guidelines on State Aid for Environmental Protection encouraged member states to support the production of renewable energy and energy efficient cogeneration through the grant of operating aid to renewable energy operating companies, covering the difference between production costs and market price.[386]

The Guidelines have been further updated in the Guidelines on State Aid for Environmental Protection and Energy 2014-2020.[387] Quite striking is the addition of the word "Energy" to the title, as opposed to the 2008 Guidelines which merely limited its provisions to environmental protection. Under clause 3(23), it was provided that such aid given would be deemed compatible if, on the basis of the assessment principles set out under clause 3.1, it leads to an increased contribution to the EU's environmental or energy objectives. Furthermore, the guidelines under clause 3.2.5.2 provide for cumulation of aid provided that the total amount of state aid does not exceed the ceiling

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[382] Staffan Jacobsson *et al*, '*EU Renewable Energy Support Policy: Faith or Facts?*' (2009) 37 Energy Policy 2143-2146.

[383] Jaap C. Jansen *et al*. (n. 322) at 103.

[384] Marc Ringel, '*Fostering the use of Renewable Energies in the European Union: The Race between Feed-in-Tariffs and Green Certificates*' (2006) 31 Renewable Energy 1 at 13-14.

[385] Reinhard Haas *et al*, '*How to Promote Renewable Energy Systems Successfully and Effectively*' (2004) 32 Energy Policy 833-839 at 838.

[386] 2008/C 82/01 http://ec.europa.eu./competition/sectors/energy/environment_en.html accessed on 13 August 2013.

[387] 2014/C 200/01. http"//eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%A52014XC0628(01). Accessed on 2 February 2015.

provided for under the guidelines. In addition, the guidelines have provided that market-based instruments, including competitive bidding processes should gradually replace existing renewable energy support schemes from 2015 onwards.[388] They captured the benefit of the cumulation of aid provided for under clause 3.2.5.2 when they observed that market instruments like tenders have limitations in promoting less mature technologies and encouraging the participation of small actors will.[389] This therefore necessitates that tenders for mature technologies will co-exist with existing aid schemes such as the FiT.[390]

On the issue of financial support, the European Energy Programme for Recovery (EEPR), discussed under 4.5 above, was also set up to co-finance projects, including renewable energy technologies.[391] In the 2012 report from the Commission entitled 'On the Implementation of the European Energy Programme for Recovery,'[392] it was stated that, from an energy policy perspective, the programme concretely contributes to deploying renewable energy technologies, in addition to the conventional sources.[393] Project development companies, engineering companies and renewable energy companies have been beneficiaries of grants made to support offshore wind energy projects.[394]

## 4.8 Sustainable Development and EU Energy Policy

As EU energy policy evolves and moves deeper towards sustainability, the concept of sustainable development comes into focus. It provides a framework for action to combat

[388] Pablo Del Rio and Pere Mir-Artigues, '*Combinations of Support Instruments for Renewable Electricity in Europe: A Review*' (2014) 40 Renewable and Sustainable Energy Reviews 287-295 at 293.
[389] Ibid.
[390] Ibid.
[391] http://ec.europa.eu/energy/eepr/ accessed on 20 August 2013.
[392] COM(2012) 445 final http://ec.europa.eu/energy/eepr/doc/com_2012_0445_en.pdf accessed on 20 August 2013.
[393] Ibid 2.
[394] Ibid 7.

an environmental crisis, which demands fundamental changes to our way of life.[395] Realising this fact, the Commission, in a 1998 communication entitled '*Strengthening Environmental Integration within Community Energy Policy*' observed that one of the main challenges facing community energy policy was the incorporation of the environmental dimension into its objectives and actions while developing a sustainable energy policy.[396] It was further observed that the integration of environmental aspects within the energy policy should take place in a balanced way, with account being taken of the other priority goals of energy policy such as competitiveness and security of supply.[397] This gives an all-round picture of the environmental, economic and social dimensions of the concept of sustainable development. At the European Council meeting of 10 and 11 December 1999, a Millennium Declaration was adopted in which the agreed strategies for integrating sustainability into energy and other sectors were acknowledged.[398]

In the 2000 Green Paper entitled 'Towards a European Strategy for the Security of Energy Supply,'[399] energy security was defined as:

> The uninterrupted physical availability of energy products on the market, at a price which is affordable for all consumers (private and industrial), while respecting environmental concerns and looking towards sustainable development

EU energy policy needs more sustainable development-based programmes and action plans to strengthen it. In 2008, a programme called 'Planning for Sustainability' (SUSPLAN) was initiated under the EU's Seventh Framework Programme, running until 2011 and seeking to bring awareness to and solutions for environmental and energy

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[395] Maria Lee (Legislation Note), '*Sustainable Development in the EU: The Renewed Sustainable Development Strategy 2006*' (2007) 9 Envtl. L. Rev. 41 at 44.

[396] http://europa.eu/legislation_summaries/energy/european_energy_policy/128071_en.htm accessed on 12 August 2013.

[397] Ibid.

[398] http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/ACFA4C.htm accessed on 12 August 2013.

[399] COM (2000) 769 final (n.281).

challenges facing the EU.[400] One of the objectives was the development of grid-based renewable energy sources integrated scenarios at national and regional levels.[401] Also, on 16 July, 2008, the Commission presented the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan (SCP/SIC Action Plan), which contains proposals on sustainable consumption and production that will contribute to improving the environmental performance of products and increase the demand for more sustainable goods and production technologies.[402]

Nash observed that the Action Plan is dependent on behavioural evolution from traditional and cultural patterns of choice to sustainable and energy efficient products and services.[403] Nash believed this evolution presented a challenge to implementation of the Action Plan. It will however be shown in chapters five to seven that behavioural evolution may not after all be a challenge to the implementation of the Plan as people will be willing to adjust to accommodate sustainable energy sources with the aid of a sustainable energy legal framework. It will be shown how laws such as planning laws present such favourable circumstances and engender positive change in sustainable energy consumption.

## 4.9 Legal Framework's Fractious Relationship with other EU Policies

Is there a conflict between Europe's sustainable energy policy, market liberalization policy and climate change policy? A case has been made that the EU faces a policy trilemma in the form of conflicting goals for sustainability in energy consumption, climate change policy and market liberalization policy.[404]

[400] http://www.susplan.eu/ accessed on 12 August 2013.
[401] Ibid.
[402] http://ec.europa.eu/environment/eussd/escp_en.htm accessed on 12 August 2013.
[403] Hazel Ann Nash, '*The European Commission's Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan*' (2009) 17 Journal of Cleaner Production 496-498.
[404] Christian Egenhofer, *Integrating Security of Supply, Market Liberalization and Climate Change* Appearing in Michael Emerson, *Readings in European Security, Volume 4* (Centre for European Policy Studies and others 2007) 80.

On the possible clash between EU energy policy and climate change policy, it can be argued that both complement each other, and that, since fossil fuels are about the highest sources of carbon emission, energy policy may be tailored to align with the goals and objectives of the climate change policy. Most climate change initiatives are targeted at the energy sector and require a great deal of sustainability in energy consumption. In the United Kingdom, for instance, realization of this led to the merging of the Climate Change and Energy Departments in 2008 to form the Department of Energy and Climate Change. At the EU level, the Commission, through its Communication entitled 'A 2030 Framework for Climate and Energy Policies' reiterated this need for a common framework for energy and climate change objectives through a high technology and a resource-efficient approach.[405] The Report therefore extensively deliberated on progress made so far on renewable technologies and the future of carbon capture and storage in Europe, recognizing the connection between the two. Effectiveness of the alignment between the two policy areas in the evolution of much needed sustainable energy laws is a different issue that will be examined under Chapter eight.

On the liberalization policy of the EU, particularly the internal energy package and the competition laws, it has been held in several cases, including *PreussenElektra AG v.Schleswag AG*[406] that measures put in place to support renewable energy technologies in each member state do not conflict with EU competition laws as long as they are proportionate and least intrusive to the fundamental principles of free trade.[407] In fact, in the 'Community Guidelines on State Aid for Environmental Protection'[408] (a follow up to the 2001 EU Guidelines which expired in 2007), it was stated that, in assessing whether an aid measure can be deemed compatible with the common market, the Commission balances the positive impact of the aid measure against its potentially negative side effect such as distortion of trade and competition through the

[405] COM/2013/0169 final http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52013DC0169:EN:NOT accessed on 14 August 2013.
[406] Case C-379/98.
[407] Andreas Gunst (n. 328) at 109.
[408] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:082:0001:0033:EN:PDF accessed on 14 August 2013.

use of a 'balancing test.'[409] Under article 71, it was stated that state aid for environmental protection was compatible with the common market within the meaning of article 87(3)( c ) of the EC Treaty if, on the basis of the balancing test, it leads to increased environmental protection activities without adversely affecting trading conditions.

Another issue that may be discussed under this topic is the determination of whether the EU's sustainable energy policy should be encompassed in a single document or should be left as it is, appearing (and evolving) in several policy documents, Green Papers and White Papers in addition to the legally binding directives. Several policy documents tailored along environmental, energy efficiency and energy security lines have emerged. While reiterating once again that the EU's energy policy is still evolving and therefore may have to be contained in several policy documents at this stage, the evolution of a concrete legal framework to support renewables should be clear and unambiguous. Pointvogl seems to suggest that the internal energy market policy of the EU is the starting point, as it is described as the most important under the EU's evolving energy policy.[410]

Inotai, believes that obstacles on the part of establishing the common energy market largely explain why no common EU-level energy policy could be implemented until today.[411] Johansson believes that the absence of a common energy policy has constrained the formal legal competence of the European Commission on energy matters despite the creation of the single European market.[412] Inglis observed that the incongruous, even contradictory, legal landscape surrounding the energy sector has not only affected the inability of member states to put a common front in international

[409] Ibid article 16.
[410] Andreas Pointvogl, '*Perceptions, Realities, Concession – What is Driving the Integration of European Energy Policies?*' (2009) 37 Energy Policy 5704 at 5708.
[411] Inotai (n 332) 15.
[412] Thomas B. Johansson, '*Policies for Renewable Energy in the European Union and its Member States: An Overview*' (2004) Vol VIII No. 1 Energy for Sustainable Development 16.

forums, but it has also impacted on the functioning of the internal market and impacted negatively on climate change obligations.[413]

What can be said at this point (and which will be examined in detail under chapter eight) is that most of the ambiguity is due to the ineffective alignment of energy and climate policies within the EU. Even though EU climate and energy policies are intertwined, a strong legal framework dedicated to energy production and consumption from sustainable energy sources, including renewable energy technologies, will go a long way in correcting some of the ambiguities.

## 4.10 The Energy Union Package

With the series of policy statements and legal framework dedicated to the energy sector, it does appear that the development of renewable energy technologies is still not progressing at the desired rate. It was recognized under the 2015 communication from the commission, entitled "Energy Union Package" that the EU was still importing 53% of its energy annually at a cost of EUR 400 billion.[414] It was further recognized that the regulatory regime of each member state was a major challenge for the common market. It was therefore proposed as one of the action points that all efforts would be made to ensure the implementation of all legislations on energy within the EU. This shows the existing fragmentation in the march towards sustainability in energy production and consumption, despite the existence of legal documents such as the Internal energy package and the 2009 Renewables Directive.

The idea behind the energy union is that member states of the EU will depend on each other to deliver secure energy to their citizens. Energy security is therefore a major goal of the new package, in addition to climate change and internal market issues. This idea or vision, which should be of immense benefits to the development of renewable energy technologies, also includes the need for citizens to take ownership of the energy

[413] Kirstyn Inglis, '*Anticipating New Union Competencies in Energy*' (2008) 15 Maastricht J. Eur. & Comp. L. 125 at 127.
[414] COM (2015) 80 final.

transition.[415] In addition, there is a realization of the need for the development of a European labour force with the skills to build and manage the energy systems of tomorrow.[416]

The Energy Union Package has laudable objectives, but it suffers from the same defects noticeable in other policy documents produced prior to 2015. In other words, development of renewable energy technologies is subsumed under a general energy package with no adequate focus on them.

## 4.11 Conclusion

This chapter has examined the progress made so far in ensuring sustainability in energy consumption within the EU and it can be observed that some progress has been made, although member states will have to increase their share of renewables more rapidly in future to meet 2020 targets.[417] On its part, the European Commission published its first Renewable Energy Progress Report on 27th March, 2013, under the framework of the reporting requirements of the 2009 Renewables Directive.[418] It has been observed that, since the adoption of the 2009 Renewables Directive, member states of the EU have experienced significant growth in renewable energy consumption.[419] In the Progress Report,[420] there had been an initial solid start at the EU level but with slower than expected removal of key barriers to renewable energy growth, requiring additional efforts by each member state.

An unavoidable feature of European energy policy is the integration between climate and energy policies.[421] Climate Change concerns have greatly influenced the way the

[415] Ibid.
[416] Ibid.
[417] Corinna Klessmann *et al*, '*Status and Perspectives of Renewable Energy Policy and Deployment in the European Union – What is Needed to Reach the 2020 Targets?*' (2011) 39 Energy Policy 7637 at 7652.
[418] http://ec.europa.eu/energy/renewables/reports/reports-en.htm accessed on 16 August 2013.
[419] Ibid.
[420] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52013DC0175:EN:NOT accessed on 16 August 2013.
[421] Ibid 5.

EU's energy policy has evolved in the drive towards sustainability. Helm observed that the EU's energy policy is built on two pillars – the Internal Energy Market and the Climate Change Package – and the latter was supposed to create world-leading companies based upon relatively cheap renewable energy.[422] It is observed that there is an ineffective alignment of climate and energy policies within the EU, even though they share almost similar goals and aspirations. There may therefore be a need for a strong reliance on an effective legal framework to adequately protect sustainable energy technology sources.

The law is the backbone for the implementation of EU energy policy. This was acknowledged in the 2015 EU Energy Union Package where the need to ensure the implementation of all legal instruments was emphasized. However, the law still has a long way to go in protecting renewable energy technologies. For instance, there has been a slow pace in the transposition of the 2009 Renewables Directive into national laws by member states.[423] In fact, infringement cases for non-transposition of the Directive were opened against countries such as Austria, Bulgaria, Cyprus, Czech Republic, Finland, Hungary, Ireland, Latvia, Luxembourg, The Netherlands, Poland and Slovenia.[424] Through Article 194(1) of the TFEU which contains the goals of the EU on energy matters, the EU should have a stronger legal framework and legal basis to act on its energy policy.[425] The Commission may have to rely on Article 122 of the TFEU which mandates it to make proposals to the Council on energy matters to recommend a new line of action which is the evolution of an effective legal framework to ensure sustainability in energy production and consumption.

EU energy policy is emerging from being just a mere energy policy into a sustainable energy policy as the element of sustainable development has been introduced into it. The element of sustainability supports the development of renewable energy

[422] Dieter Helm, '*The European Framework for Energy and Climate Policies*' (2014) 64 Energy Policy 29-35.
[423] See 'Report from the Commission to The European parliament, The Council, The European Economiuc and Social Committee and The Committee of the Regions' Renewable Energy Progress Report (COM/2013/0175 final. Available at http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%A52013DC0175. Accessed on 20 October 2016.
[424] Ibid.
[425] Maria Carvalho (n. 304) at p. 20.

technologies towards the evolution of a sustainable energy policy. Vehicles such as the SET-Plan are being used. These technologies are however expected to be developed taking into consideration an effective balance between the economic, environmental and social dimensions of the concept of sustainable development (examined in detail in Chapters Five-Seven).

However, it must be said that EU sustainable energy policy is subsumed under a general energy policy for the region. It can therefore be said that the EU energy policy is still evolving and can be described as 'a work in progress.'[426] Because EU Sustainable Energy Policy is subsumed under a general Energy Policy, not enough attention has been devoted to the development of renewable energy technologies. In addition, when talking about sustainable energy policy in the EU, issues of carbon emission reduction and the security of supplies of conventional energy from external sources have continued to overshadow the development of renewable energy technologies. It therefore appears that the only way adequate attention can be given to these technologies is by having laws dedicated to them.

[426] Israel Solorio Sandoval and Francesc Morata, '*Introduction: The Re-evolution of Energy Policy in Europe*' Appearing in Francesc Morata and Israel Solorio Sandoval, *European Energy Policy: An Environmental Approach* (Edward Elgar Publishing Limited, 2012) 3.

# CHAPTER FIVE

# LEGAL FRAMEWORK AIDING THE ECONOMIC VIABILITY OF RENEWABLE ENERGY TECHNOLOGIES IN THE EU

## 5.1 Introduction

In chapters Five to Seven, it will be shown how, within the evolving legal framework, renewable energy technologies can be tools of economic, environmental and social development in the march towards sustainability and the fulfilment of the obligation to future generations to preserve energy sources for development. There is a careful balance of the economic, environmental and social factors that constitute the concept of sustainable development and are relevant to sustainability in energy consumption through renewable energy technologies. Cosmi *et al* observed that coordination of all the factors is necessary to achieve an effective sustainable management of resources, which integrates energy needs in a comprehensive territorial planning strategy.[427] Chapter Five discusses the economic aspect of this journey and how EU member states stand to gain economically from investments in renewable energy technologies within the evolving legal framework.

Malizia defines economic development as:

> The ongoing process of creating wealth in which producers deploy scarce human, financial, capital, physical and natural resources to produce goods and services that consumers want and are willing to pay for. The economic developer's role is to participate in the process of national wealth creation for the benefit of local consumers and producers by facilitating either the expansion of job opportunities and tax base or the efficient redeployment of local resources.[428]

[427] Carmelina Cosmi *et al*., '*A Holistic Approach to Sustainable Energy Development at Regional Level: The RENERGY Self-Assessment Methodology*' (2015) 49 Renewable and Sustainable Energy Reviews 693-707 at 706.
[428] E.E. Malizia, '*A Redefinition of Economic Development*' (1994) Economic Development Review. Spring 83-84.

In relating this definition to the role of renewable energy technologies in economic development, the definition put forward by Carley is utilized. He defined energy-based economic development as:

> A process by which economic developers; energy policy makers and planners; government officials; industry, utility and business leaders ; and other stakeholders in a given region strive to increase energy efficiency or diversify energy resources in ways that contribute to job creation, job retention, and regional wealth creation.[429]

The chapter examines the economic benefits accruable to the EU, corporate organizations and individuals in utilizing renewable energy technologies with the aid of legal instruments. These benefits are focused on with the law as a background legal tool utilized in encouraging investments in these technologies, leading to sustainable development. In addition, the role of the law in overcoming perceived economic challenges are looked at as it relates to both conventional and renewable energy producers. It will be shown that the economic benefits derivable from investments in renewable energy technologies may outweigh those currently derivable from conventional energy production, taking advantage of legal tools put in place. Another related economic issue is the effect fiscal instruments have on energy consumers due to the internalization of environmental externalities. Do they ensure economic development? It will be shown that, by taking advantage of legal tools, energy consumers have a lot to benefit economically from a shift to renewable energy technologies.

Economic development is an important part of the sustainable development paradigm, particularly considering the fact that the concept was proposed by western environmentalists in response to objections by developing countries to emerging environmental concerns which had little or nothing to do with them and at a time when they were faced with economic challenges.[430] It will be shown at the end of the chapter

[429] Sanya Carley, '*Energy-based Economic Development*' (2011) 15 Renewable and Sustainable Energy Reviews 282-295 at 287.
[430] Simon Dresner, *The Principles of* Sustainability (Earthscan Publications Ltd., 2002) at 1.

that, through the aid of legal tools, renewable energy technologies can contribute immensely to economic development in the march towards the evolution of an enduring sustainable energy legal framework within the EU.

## 5.2 Shifting from Conventional Energy Generation to Renewable Energy Technologies by Conventional Energy Producers and Energy-Intensive Companies

Conventional energy producers will naturally be worried about what becomes of their traditional sources of income in the case of a shift to renewable energy sources. They will particularly be concerned about what becomes of their heavy equipment onshore and offshore used in exploration and production of fossil fuels and whose economic life is still significantly long. Levy observed that there was an initial opposition to renewable technologies by some conventional energy producers when he stated that:

> The fossil fuel industry's initial response to this threat varied considerably across regions and industries. U.S. companies in the coal, oil, automobile, utility, and chemicals industries formed industry associations, lobbied politicians, challenged the science of climate change, and pointed to the high cost of reducing emissions.[431] (emphasis mine).

The main issues for consideration are whether a shift signals the end for these operators and whether the economic cost of the equipment to be abandoned will be covered after a shift to renewable energy technologies. These issues must however be looked at, considering the fact that the days of 'easy oil', or petroleum deposits that can be extracted relatively effortlessly and cost effectively may be coming to an end in a few decades.[432] For instance, a 2013 review of ratio of oil reserves to production in some selected countries has revealed a lower ratio of reserves, raising concerns over

[431] David L. Levy, '*Business and the Evolution of the Climate Regime: The Dynamics of Corporate Strategies*' Appearing in David L. Levy and Peter J. Newell (eds.), *The Business of Global Environmental Governance* (Massachusetts Institute of Technology, 2005) 73.

[432] Hermann Scheer, *Energy Autonomy: The Economic, Social and Technological Case for Renewable Energy* (Earthscan, 2007) 37.

depletion rates and the need for development of alternative energy sources.[433] Levy has observed that the opposition by conventional energy producers to green technologies stems mostly from the uncertainties surrounding carbon emission and climate change considerations.[434] It may be difficult for such opposition to stand in the face of mounting evidence of increasing reserves depletion especially within the EU.

It has been observed that a resort to non-fossil sources of energy does not signal the death of the oil and gas industry, and that as technological demands for alternatives increase, the shift from fossil fuels towards sustainable energy methods can be seamless.[435] A gradual shift of production of energy from fossil fuel sources to renewable energy sources should enhance economic development. Corporate organizations can take advantage of state aid provided for under the 2014 Guidelines on State Aid for Environmental Protection and Energy 2014-2020.[436] One notable feature of the 2014-2020 Guidelines is the express mention of energy in the title, unlike past guidelines which limited the title to environmental protection. Aids to renewable energy technologies can be granted as investment or operating aid and eligible cost can be calculated as extra investment cost compared to the cost of a conventional power plant with the same capacity in terms of the effective production of energy.[437] The Guidelines have been put in place pursuant to the provisions of the Treaty on the Functioning of the European Union.[438] Taking advantage of these aids could lead to economic development though these technologies.

There is a growing realization of this fact and of the economic benefits derivable. For instance, Lion Energy, a European crude oil trading and distribution company, stated on its website that it can build solar power plants that produce electricity at a cost below the

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[433] Office of Energy Efficiency and Renewable Energy, '*May 20, 2013 Crude Oil Reserve to Production Ratio*' <available at energy.gov/eere/vehicles/fact—780-may-20-2013-crude-oil-reserve-production-ratio> Accessed on 25 April, 2016.

[434] n. 425.

[435] Brett Buchheit, '*The Economics of Alternative Energy: Decisions Following the IPCC's Report on Climate Change*' (2007-2008) 38 Tex. Envtl. L.J. 73 at 108.

[436] Communication from the Commission. (2014/C 200/01).

[437] Marcella Giacomarra and Filippa Bono, '*European Union Commitment towards RES Market Penetration: From the First Legislative Acts to the Publication of the Recent Guidelines on State Aid 2014/2020*' (2015) 47 Renewable and Sustainable Energy Reviews 218-232 at 227.

[438] OJ C 326/47 of 26/10/2012.

cost resulting from existing fossil fuel plants, and such solar plants can deliver output even during long periods of cloudy days.[439] Sir John Browne, a former Group Chief Executive of British Petroleum, saw the potentials in green technologies and stated that by 2020, renewables could account for 5% of profits, reaching 50% by 2060.[440]

In fact, according to the EU 2050 Roadmap, investments in renewable energy technologies could provide €25 billion annual export market within the first decade if the EU continues to maintain its leading position on environmental matters, providing an economically viable alternative for existing oil and gas companies.[441] This is particularly important, considering the fact that existing oil and gas reserves, particularly in the North Sea, are dwindling rapidly, leading to lower revenue streams and the attendant job losses. The job losses will not be limited to the oil and gas companies alone, but will also extend to the oil service companies and others that provide supply chain services to those companies.

In view of the fact that employment in the oil and gas industry is directly proportional to the level of production at any given time, the key challenge that has been observed is how to transform the economy of all those that depend on the industry without losing the jobs and expertise of these people, especially those who are highly capable of working in the difficulty marine environments of the offshore oil and gas industry.[442] It has therefore become essential for governments of member states to promote renewable energy sources, not only for the sake of the environment, but also to make sure that sustainable jobs are created which do not disappear after the oil and gas resources are eventually depleted.[443] There is the potential of transferring some of the job skills applicable in the North Sea oil and gas industry (for instance) to the offshore renewables sector - which includes offshore wind farms and tidal power generation

[439] http://www.lionhellas.com/power2.htm accessed on 11 September 2013.
[440] David Levy and Ans Kolk, '*Strategic Responses to Global Climate Change: Conflicting Pressures on Multinationals in the Oil* Industry' (2002) 4 Bus. and Politics 275-300 at 292.
[441] '*Roadmap 2050: A practical Guide to a Prosperous Low-Carbon Europe*' (2010) Vol. 1 at 19 http://www.roadmap2050.eu/attachments/files/Volume1.fullreport.PressPack.pdf accessed on 11 September 2013.
[442] Miguel Esteban *et al*, '*Job Retention in the British Offshore Sector through Greening of the North Sea Energy Industry*' (2011) 39 Energy Policy 1543 at 1544-1546.
[443] Ibid 1548.

technologies – as the offshore industry declines due to depleting reserves. This mitigates the effect of the attendant job losses in the industry. In fact, Memon and Rashdi believe that the skills developed in the offshore oil and gas industry are transferrable to the offshore wind farm subsector.[444]

There is also the issue of higher energy bills to be paid by energy-intensive companies which still rely on fossil fuel sources. They have to bear the full cost of higher energy prices precipitated by green taxes and other regulations like the EU-ETS Directive aimed at encouraging cleaner energy sources. This leads to increased production costs. As it is, under the Large Combustion Plants Directive,[445] carbon emission limits have been set for such energy-intensive companies, with those opting out of the directive being required to cease operations before 2016, leading to possible job losses and loss of earnings and subsequent reduction in GDP.

One way by which energy-intensive companies in the EU can reduce the economic risks of observing EU-ETS conditions is by utilizing the provisions of Directive 2004/101/EC (Linking Directive), which allows them to use certificates derivable from the Kyoto Protocol Flexible Mechanisms (Clean Development Mechanism and Joint Implementation) in limiting their exposure. This will give them some time to engender a seamless transition to low carbon renewable energy sources with minimal economic risks. But it has been observed that the macroeconomic costs of complying with EU environmental regulations such as the EU-ETS (by for instance investing in alternative and sustainable energy sources) are minimal, with losses clearly below 1% of GDP, and with possibilities of actual gains having been proven in other studies.[446]

As for the energy-intensive companies that have opted out of EU environmental regulation, it may be observed that most of them are fossil fuel-based power plants.

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[444] Zahid Memon and Roshan Rashdi, '*Knowledge Proximity and Technological Relatedness in Offshore Oil and Gas and Offshore Wind Technology in the United Kingdom*' (2008) 7 Int'l Journal of Tech. Mgmt. and Sustainable Dev. 59.

[445] Directive 2001/80/EC.

[446] Astrid Dannenberg, Tim Mennel and Ulf Moslener, '*What Does Europe Pay for Clean Energy? – Review of Macroeconomic Simulation Studies*' (2008) 36 Energy Policy 1318-1330.

This much was observed in the 2009 Economic Report of Oil and Gas UK, which stated that:

> As far as security of supply is concerned, the biggest concern is power generation. There are so many coal (plus the few remaining oil) fired and nuclear power stations to be closed in the next 15 years, on account of both age and more stringent emissions limits.[447]

Most energy-intensive companies can potentially benefit from a shift to renewable energy technologies in line with the Porter Hypothesis which is to the effect that strict environmental regulations such as the EU-ETS Directive and the Large Combustion Plants Directive will lead to increased competitiveness of such firms and subsequently the economies of member states because they will trigger green innovations that will lead to a reduction in production costs.[448] Subsectors of the economy like the construction industry should not lose out in the shift to renewable energy sources. This is because, now, new technological breakthroughs make it possible to design and construct buildings that generate all of their own energy from locally available renewable energy sources, allowing us to re-conceptualize the future of buildings as 'power plants.'[449]

Kulovesi rightly observed that the private sector plays an important role in the design of future energy infrastructure and technologies needed for sustainability,[450] creating veritable business opportunities for such companies. Scholars like Huhne have stated that a shift to renewable energy sources could signal the beginning of the low carbon

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[447] Oil and Gas UK, *2009 Economic Report. Chapter 4,* '*Security of Energy Supplies'* (July 2009) 15 http://www.oilandgasuk.co.uk/search/index.cfm?client=oilandgas_default&output=xml_no_dtd&site=default_collection&proxystyles accessed on 11 September 2013.

[448] Michael E. Porter and Claas Van Der Linde, '*Towards a New Conception of the Environment-Competitiveness Relationship*' (1995) Vol. 9 No. 4 Journal of Economic Perspectives 97-118.

[449] Maria da Graca Carvalho, Matteo Bonifacio and Pierre Dechamps, '*Building a Low Carbon Society*' (2011) 36 Energy 1842-1847 at 1843.

[450] K. Kulovesi, '*The Private Sector and the Implementation of the Kyoto Protocol: Experiences, Challenges and Prospects*' (2007) 16 Review of European Community and International Environmental Law 145.

industrial revolution, similar to the industrial revolution of the 18th and 19th centuries.[451] However, Pearson and Foxon suggested that, for a low carbon transition to become a successful low carbon industrial revolution, the key technologies would need to be able to stimulate and sustain the longer term delivery of significant, wider productivity gains and other benefits.[452] Although they suggested that it was not clear that the set of currently available renewable energy technologies yet demonstrate these traits, it may be that these technologies are beginning to show those traits as the transition progresses. Their misconception primarily arises from their viewing of the technologies from the angle of climate change and therefore seeing such technologies as performing a social function ( carbon emission reduction) rather than an economic function, the latter being a function of the technologies of the first industrial revolution. Renewable energy technologies go beyond being tools for social change. Rather, they are tools that can be used to lay a foundation for a second industrial revolution, utilized by the companies in the private sector for the economic development of the EU.

In the United Kingdom, conventional energy producers can take advantage of the fast track procedure under the Planning Act, 2008, to invest in onshore and offshore wind farms. This is because, under the Act, projects with a generating capacity of more than 50MW onshore and 100MW offshore are classified as nationally significant energy projects worthy of consideration under the fast track procedure.[453] Furthermore, companies should be able to rely on the investment protection provisions of the Energy Charter Treaty to protect their investments. This is in spite of the argument of the EU Commission in cases such as *Electrabel S.A v. Hungary*[454] that EU investors cannot rely on the treaty. The investment protection provisions, for instance, will enable investors to enforce government state aid schemes meant for the development of the

[451] Chris Huhne, '*The Economics of Climate Change*' Speech by Secretary of State for Energy and Climate Change. 29 June 2011 http://www.decc.gov.uk/en/content/cms/news/ec-cc_ch/ec_cc_ch.aspx accessed on 10 October 2013.

[452] Peter J.G. Pearson and Timothy Foxon, '*A Low Carbon Industrial Revolution? Insights and Challenges from Past Technological and Economic Transformations*' (2012) 50 Energy Policy 117-127 at 121.

[453] Policy Paper, '*2010-2015 Government Policy: Energy Industry and Infrastructure Licensing and Regulation*' (Updtaed 8 May, 2015). Available at gov.uk/government/publications/2010-to-2015-government-policy-energy-industry-and-infrastructure-licensing-and-regulation/2010-2015> accessed on 25 April, 2016.

[454] ICSID Case No. ARB/07/19.

technologies, as well as minimize non-commercial risks associated with such investments.[455]

## 5.3 Fiscal and Economic Policies

Fiscal and economic policies designed to encourage investments in renewable energy technologies are, in most cases, backed by legal instruments. Opponents of the technologies may argue that, without economic incentives like carbon taxes which are linked to climate change considerations, such technologies can never attain the required level of competitiveness required for economic development. This argument is particularly more pronounced with the uncertainty surrounding the effect of carbon emission. The bottom line, however, is that, even if climate change is not real, there is evidence that current conventional energy reserves are dwindling and may be exhausted with nothing left for future generations. Therefore, fiscal and economic policies put in place to encourage investments in renewable energy technologies are vital to ensuring energy security in the EU. To ensure that we leave a considerable measure of energy reserves (conventional and renewable, or a combination of the two) behind for future generations, such fiscal measures are needed to protect existing reserves of fossil fuels and develop new green energy sources. Kajikawa *et al* appear to support this when they stated that, although current conventional energy reserves may meet current demands, there is a need for investment in green energy in order to contribute to future energy supply and support energy conservation strategies.[456]

Fiscal incentives are recognized as keys towards green growth.[457] It has been observed that, as long as energy prices remain at current low levels and do not reflect the full external costs of producing the energy, there will be little incentives to develop

[455] Kaj Hober, '*Investment Arbitration and the Energy Charter Treaty*' (2010) Vol. 1 No. 1 Journal of International Dispute Settlement 153-190 at 155.

[456] Yuya Kajikawa *et al*, '*Tracking Emerging Technologies in Energy Research: Toward a Roadmap for Sustainable Energy*' (2008) 75 Technological Forecasting & Social Change 771-782 at 772.

[457] Carlo C. Jaeger *et al*, '*A New Growth Path for Europe: Generating Prosperity and Jobs in the Low-Carbon Economy*' (A Final Report, 2011) 18 http://www.newgrowthpath.eu/wp-content/uploads/2011/06/A_New_Growth_Path_for_Europe_Final_Report.pdf accessed on 11 September 2013

alternatives to fossil fuels and nuclear energy.[458] Fiscal incentives, which are backed up by legislative instruments, therefore act as vehicles to internalize such costs. It has however been argued that green technologies also have external costs, including remote energy sources and the transmission lines needed to connect them which affect landscaping quality and wind turbines with attendant bird strike and turbine noise problems.[459]

It appears the fiscal and economic policies put in place to encourage renewable energy technologies do not reflect these 'external costs.' But it may be argued that, weighing the external costs of the conventional sources of energy and green energy sources, the external costs of the latter are far lower than those of the former. Existing green energy fiscal policies should be strictly limited to being instruments for encouraging such technologies. Assigning costs to environmental externalities in the first place can be said to be rooted in the need for society to pay for the cost of carbon emission, pollution and other environmental effects of conventional energy sources. Society is in turn compensated when such costs are used to develop sustainable energy sources.

Germany's feed in law was intended to promote the manufacturing sector of the economy, with the manufacturing of PV panels evolving into an important pillar of economic development.[460] Although there is no uniformity as yet at the EU level on such policies, there is one immediate economic benefit derivable. Member States where fiscal instruments are designed to reduce the costs of green energy production and consumption (making it more attractive than fossil fuel energy sources) could emerge as favourable destinations for investors in green technologies. This will lead to competition among member states for appropriate fiscal policy instrument design, thereby guaranteeing a relatively better return on the ground.[461] The ruling of the European

[458] '*Energy, the Environment, and Global Economic Growth*', Summary of Remarks by Maurice Strong, Chairman of Ontario Hydro, former UN Under Secretary-General and Chair of the 1992 Rio Earth Summit (1994-1995) 2 Tulsa J. Comp. & Int'l L. 121 at 122.

[459] Carolyn Fischer and Louis Preonas, '*Combining Policies for Renewable Energy: Is the Whole Less than the Sum of its Parts?*' (2010) 4 International Review of Environmental and Resource Economics 51-92 at 83.

[460] Christoph Burger and Jens Weinmann, '*Germany's Decentralized Energy Revolution*' (2014) Distributed Generation and its Implications for the Utility Industry 49-73 at 53.

[461] Joyashree Roy *et al*, '*Fiscal Instruments: Crucial Role in Financing Low Carbon Transition in Energy Systems*' (2013) 5 Current Opinion in Environmental Sustainability 261-269 at 262.

Court of Justice in the case of *Alands Vindkraft v.* Energimyndigheten[462] is however instructive at this point. It was ruled that member states are not required to support the production of renewable energy in other EU member states. Ydersbond and Sveen, arguing in support of the ruling in this case, stated that, if there was no harmonization of support schemes at the EU level, but a producer was still granted access to other countries support schemes, producers would strategically seek support from the most beneficial state support scheme.[463] It may be stated that the implication of this is that the country with the less favourable support schemes may lose out as investors in such a country will rather site renewable energy projects in border towns and cities to feed produced energy to neighbouring countries with more generous support schemes.

At this point, there may appear to be a clash between EU competition regulations and the fiscal policies. But the decision in the case of *PreussenElektra AG v. Schleswag AG*[464] has ensured that such fiscal policies do not clash with EU competition rules if laid down conditions are fulfilled. The conditions are now laid down in the 2014 Guidelines on State Aid for Environmental Protection and Energy.[465] Most of the financial instruments put in place to encourage renewable energy technologies may lead to initial high energy bills on the part of final consumers. Fouquet observed that a transition to a more expensive renewable energy source means that firms would have to charge more for their products, and as such customers' budgets would not stretch as far, effectively acting as a break upon economic growth.[466] He therefore concluded that, for a shift to renewable energy technologies to occur, such technologies would have to provide cheaper energy services.[467] Fiscal policies such as the feed-in-tariff (regulated by the various national Feed-in-Tariff Regulations) brought in to address the costs of green technologies are known to be the main drivers of the negative economic effect of these

[462] C-573/12. (03/07/2014).
[463] Ingg Margrete Ydersbond and Thea Sveen, '*The Aland Case and the Future of Renewables in Europe*'. Energi Klima. Available at energiogklima.no/kommentar/the-aland-case-and-the-future-of-renewables-in-Europe. Accessed on 26 April, 2016.
[464] Case C-379/98 (Court of Justice of the European Communities).
[465] n. 430.
[466] Roger Fouquet, '*The Sustainability of 'Sustainable' Energy Use: Historical Evidence on the Relationship between Economic Growth and Renewable Energy*' Appearing in Ibon Galarraga, Mikel Gonzales-Eguino and Anil Markandya, *Handbook of Sustainable Energy* (Edward Elgar Publishing Ltd 2011) 9.
[467] Ibid 16.

technologies as they eventually lead to increases in conventional energy prices through their budget sharing mechanisms.[468]

Lowe however observed that higher investments in such technologies are needed to gradually bring down the costs.[469] He further stated that, even if not all the benefits of such investments are easily quantifiable, the cost benefit analysis is clear: the industrial development and jobs generated, reduction in fossil fuel imports from outside the EU, the reduction in pollution, and the avoidance of huge long term costs of climate change indicate that such investment in renewable energy technologies is the economically rational path to follow.[470] Furthermore, initial increases in energy prices due to fiscal taxes like the carbon tax can be mitigated by consumers engaging in a rational consumption of energy to reduce their energy bills. This is against the backdrop of the fact that consumers tend to engage in high levels of consumption when the price of a particular product falls, which may, in any case, be inimical to energy sustainability efforts.

Carbon taxes are an example of financial instruments rolled out to discourage consumption of fossil fuels and encourage consumption of green energy. For instance, in the United Kingdom, the Climate Change Levy was introduced under the Finance Act 2000 as a tax on conventional energy delivered to non-domestic users. Apart from being a source of revenue for government, thereby boosting its economy, such taxes have been said to cause less economic distortion than traditional excise taxes by internalizing the social cost of pollution from fossil fuel consumption, thereby improving economic efficiency.[471] Feed-in-tariffs, introduced under various feed-in-laws, are another form of fiscal incentive in which the regulator sets fixed prices below which green energy cannot fall. The fixed price is usually above the market price to cover the

[468] Ulrike Lehr, Christian Lutz and Dietmar Edler, '*Green Jobs? Economic Impacts of Renewable Energy in Germany*' (2012) 47 Energy Policy 358-364 at 361.
[469] Philip Lowe, '*Regulating Renewable Energy in the European* Union' (2010) Renewable Energy L. 7 Pol'y Rev. 17 at 19.
[470] Ibid.
[471] Frank Muller and J. Andrew Hoerner, '*Greening State Energy Taxes: Carbon Taxes for Revenue and the Environment*' (1994) Vol. 12 No. 1 Pace Envtl. L. Rev. 5 at 9.

cost disadvantage of the green energy sources.[472] The problem here however is that, if the prices are set too high, the cost is shifted by the supplier to the final consumer, leading to a rise in energy poverty.[473] As stated earlier, a rational and efficient consumption of energy can mitigate the effect of such high energy prices.

One major area of concern on utilization of fiscal policies to encourage green technologies, however, is their ability to make EU companies less competitive when compared with other companies in regions of the world where the zeal to develop renewable energy technologies is less, particularly the United States, China, India and Russia. In view of the absence of hard laws at the international level, companies in such countries may enjoy lower operating costs because of the absence of fiscal policies that penalize fossil fuel consumption, making their products cheaper than those manufactured by EU companies. However, it may be stated that the cost of importing conventional energy from outside the EU would outweigh whatever cost is being incurred currently on energy consumption occasioned by such fiscal and economic energy policies to encourage renewable energy technologies.

Another area of concern appears to be that raised by Reilly who queried the labour-intensity of green technologies, observing that energy costs would rise substantially to pay wage bills.[474] Therefore, the danger of focusing stimulating funding on high labour, job-creating green energy is that, once government fiscal support schemes are removed, such green technologies cannot survive in the market, even with the proper pricing of externalities associated with fossil fuels.[475] Reilly however did not consider the fact that the prices of renewable energy technologies should have fallen to such an extent that they would be viable economically without fiscal policy support. Furthermore, due to further improvements, such green technologies should by then be able to pay associated labour costs from revenue streams. There is also the possibility that further

[472] Marc Ringel, '*Fostering the use of Renewable Energies in the European Union: The Race between Feed-in-Tariffs and Green Certificates*' (2006) 31 Renewable Energy 1-17 at 6.
[473] Ibid.
[474] John M. Reilly, '*Green Growth and the Efficient use of Natural Resources*' (2012) 34 Ecological Economics S85-S93 at 586.
[475] Ibid.

improvements in technology will reduce the intensity of labour associated with these renewable energy technologies.

## 5.4 Can Legal Tools make Renewable Energy Technologies Economical? And can they Sustain the EU Economy?

A major perceived disadvantage of renewable energy technologies is their higher cost when compared with fossil fuel sources and require a great deal of government funding for survival, leading to high cost of energy available to consumers. Clean Edge, as far back as 2006 in its Report, however believes that such technologies can survive without government intervention.[476] Good Energy, a United Kingdom based company, is aiming to build the country's first subsidy-free wind farm.[477] The company, in its 2015 Report, stated that renewables are cutting the wholesale price of energy and lessening the impact of subsidies on bill payers.[478]

The problem of renewable energy technologies not being economic is an initial problem due to their being at an early stage of market development which will fade away with time. Some of the legal tools highlighted earlier under paragraph 5.3 have been put in place to tackle the initial challenges faced by these technologies, and they are expected to become independent of the legal tools after a period of time which may be called the "weaning period." One major way of moving away from the "weaning period" and achieving large reductions in the cost of green electricity from these technologies is through further technical developments, manufacturing improvements and large scale production of the technologies.[479]

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[476] Clean Edge, '*Clean Energy Trends* 2006' (2006) 1 http://www.cleanedge.com/reports/clean-energy-trends-2006 accessed on 11 September 2013.

[477] Sami Grover, '*Is Renewable Energy about to go Subsidy-free?*' (March 15, 2016). Available at mnn.com/earth-matters/energy/stories/renewable-energy-about-go-subsidy-free. Accessed on 27 April, 2016.

[478] Goodenergy.co.uk/green-energy/good-energy-research. Accessed on 27 April, 2016.

[479] H. Muller-Steinhagen and J. Nitsch, '*The Contribution of Renewable Energies to a Sustainable Energy Economy*' (Keynote Lecture) (2005) 83 B4 Process Safety and Environmental Protection 285-297.

As a matter of fact, the costs of some of these technologies like wind and solar power systems have dropped substantially in the last thirty years and continue to decline, while the prices of oil and gas continue to fluctuate.[480] Furthermore, going by the conservative analysis of Lehr, who assumed a moderate estimate of future energy prices, the additional costs of conventional energy sources will increase over the next ten years. As such, for an oil price of $60/barrel in 2020 and a carbon price from tradable permits around €15/t, the maximum of additional costs will be €5 billion in 2015, and with this development, competitiveness will be reached around 2020.[481] The International Energy Agency (IEA), in its 2014 World Energy Outlook, stated that the short-term picture of a well-supplied oil market (occasioned by supplies from non-conventional sources, for instance) should not disguise the challenges that lie ahead.[482] One of the reasons for this is because, for every barrel of oil no longer used in OECD countries, two barrels more are used in non-OECD countries.[483] In its 2015 World Energy Outlook, the IEA observed that the balance was shifting towards low carbon technologies (including renewable energy technologies) as the cost of extracting the remaining conventional energy reserves rises. On the other hand, the IEA observed that the cost of low carbon technologies (including renewables will continue to fall.[484]

While Bradley and Whitehead are of the opinion that internalizing environmental externalities may add to the operational costs of companies,[485] Gelbspan observed that the real economic issue in supplying the world with clean energy is not cost but labour.[486] He stated that the job opportunities provided in production of clean energy technologies will need a large labour force,[487] which in turn will generate employment opportunities and boost the EU economy. For instance, Demirbas, quoting a European

[480] A.K. Akella, R.P. Saini and M.P. Sharma, '*Social, Economic and Environmental Impacts of Renewable Energy Systems*' (2009) 34 Renewable Energy 390-396.
[481] Ulrike Lehr, '*Renewable Energy and Employment in Germany*' (2008) 36 Energy Policy 108-117.
[482] International Energy Agency, '*World Energy Outlook 2014*'. Executive Summary pg. 2 https://www.iea.org/Textbase/npsum/WEO2014SUM.PDF> accessed on 3 April, 2015.
[483] Ibid.
[484] International Energy Agency, '*World Energy Outlook 2015*' Executive Summary pg. 6. Available at iea.org/Textbase/npsum/WEO2015SUM.pdf. Accessed on 9 June 2016.
[485] Noah Walley and Bradley Whitehead, '*It's Not Easy being Green*' (1994) Harvard Business Review.
[486] Ross Gelbspan, '*Addressing Climate Chaos*' in Herbert Girardet ed., *Surviving the Century: Facing Climate Chaos and other Global Challenges*' (Earthscan 2007) 23.
[487] Ibid.

Commission Report, observed that production of biofuels equivalent to 1% of EU automotive fuel consumption would help to protect or create between 45,000 and 75,000 jobs.[488] In its 2014 Annual Review, the International Renewable Energy Agency stated that, in the EU, there were more than 1.2million renewable energy jobs in 2012, the most recent year for which complete data were available for the region.[489]

Cohen and Boyd stated that substituting current conventional technologies with renewable energy technologies that minimize, nullify or even improve on earlier negative externalities, generates opportunities for new ventures including consequential supply chain services (in addition to positive environmental externalities, for instance the remediation of polluted ecosystems).[490] They further stated that innovative firms able to recognize and create opportunities to reverse existing negative environmental externalities can generate triple bottom line results - a cleaner environment, economic prosperity and social benefits for present and future generations.[491]

It has also been said that the assumption that fossil fuels are more economical than green energy sources is based on an incomplete analysis, as an examination of the entire supply chain for fossil fuel energy demonstrates the advantages of renewable energy sources which have much shorter supply chains, making such green technologies more attractive to investors.[492] As such, the renewable energy sources can be harnessed in a more efficient, more user-friendly and more economical fashion than conventional energy sources.[493] Laws have been put in place within the EU to support distributed energy generation and ease of network access for renewable energy technologies. For instance in Germany, the Energy Industry Act of 1998 has environmental protection as one of its objectives. Pursuant to these objectives, the

[488] Ayhan Demirbas, '*Biofuels Securing the Planet's Future Energy Needs*' (2009) 50 Energy Conversion and Management 2239-2249 at 2243.
[489] International Renewable Energy Agency, '*Renewable Energy and Jobs: Annual Review 2014*' at pg. 6 <http://www.irena,org/publications/rejobs-annual-review-2014.pdf. accessed on 3 April, 2014.
[490] Boyd Cohen and Monika I. Winn, '*Market Imperfections, Opportunities and Sustainable Entrepreneurship*' (2007) 22 Journal of Business Venturing 29 at 40.
[491] Ibid 41.
[492] Hermann Scheer, '*The Solar Economy: Renewable Energy for a Sustainable Global Future*' (Earthscan 2002) 29.
[493] Ibid 30.

Renewable Energy Act gives privileges to producers of energy from renewable energy sources in accessing the national grid.

A perceived shortcoming in the law (also discussed under chapter eight) was identified by Joode *et al* who observed that there was a need for current regulation to take into account the differential impact of increasing distributed generation on the performance of distribution system operators to adequately incentivize them.[494] They suggested a regulatory formula where the impact of distributed generation on both operating expenditures and capital expenditures are included.[495] On their part, Allan *et al* observed that the complex system of licensing applicable for the generation and supply of electricity to the network in the UK make electricity generation more costly for distributed energy producers.[496] The provisions made under the Renewables Directive 2009 at the EU level are examined in detail under chapter eight.

One critical factor which may aid in making investments in renewable energy technologies cheaper is the utilization of the cooperation mechanisms in Directive 2009/28/EC – the Renewables Directive. Lowe stated that they allow a member state with expensive domestic renewable energy sources to help develop cheaper sources in another member state towards the meeting of its targets.[497] He observed that, if member states were to take full advantage of these instruments, an estimated €8 billion could be saved while meeting the targets in the directive.[498] Even without these cooperation mechanisms in some cases where there is an abundance of localized renewable energy sources, considerable economic prosperity has been witnessed. In Spain for instance, its remarkable wind resources coupled with generous government policies and the subsequent maturity of the industry, have facilitated a high level of

[494] J. de Joode *et al.*, '*Increasing Penetration of Renewable and Distributed Electricity Generation and the Need for Different Network Regulation*' (2009) 37 Energy Policy 2907-2915 at 2914.
[495] Ibid.
[496] Grant Allan *et al.*, '*The Economics of Distributed Energy Generation: A Literature Review*' (2015) 42 Renewable and Sustainable Energy Reviews 543-556 at 547.
[497] Philip Lowe (n. 469) at 20.
[498] Ibid.

technological competition, leading to higher profitability projections for investors and a subsequent greater attraction for private investment.[499]

Although the EU-ETS Directive has the potentials to aid investments in renewable energy technologies, the carbon pricing provisions of the EU-ETS need to be revisited. In a joint press statement by EU Environment Ministers, it was observed that the EU-ETS as currently designed cannot provide the price signals needed to stimulate the low carbon investment needed because the supply allowances substantially outstrip demand, leading to a very low carbon price, and threatening the credibility of carbon markets.[500] This issue will be addressed in the establishment of the ETS Market Stability Reserve of 2018, which will start operating in January 2019.[501]

Although it has been said that a transition to a low carbon economy will not be costless, which means that low carbon development is likely to draw resources away from investments in other development sectors such as education and health,[502] the analysis of Flavin may be instructive. He traced the history of economic change as far back as the 1860s when oil was first discovered.[503] It was virtually useless and far more expensive than coal; and, prior to the development of technologies such as refineries and internal combustion, was useless even for transportation. It later became a dominant energy source which reshaped the global economy. He observed that dominant technologies and businesses are generally reliable and economical and, over time, they develop a network of institutional and political support that effectively resists change. However, over time, the new technology becomes more economical and

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[499] Carmen Navarro, '*Spain: Greening Electricity while Growing the Economy*' In William M. Lafferty and Audun Ruud, '*Promoting Sustainable Electricity in Europe: Challenging the Path Dependence of Dominant Energy Systems*' (Edward Elgar Publishing Limited 2008) 139.

[500] Joint Statement on the EU Emissions Trading System. Monday July 1, 2013 http://www.eurelectric.org/media/83839/BUSINESS%20PRESS%20STATEMENT%20endorsing%20the%2012%20Ministers%20letter%20on%20ETS_F.. Accessed on 16 September 2013.

[501] COM (2014) 20/2. <http://ec.europa.eu/clima/policies/ets/reform/docs/com_2014_20_en.pdf> accessed on 5 April, 2015.

[502] Yacob Mulugetta and Frauke Urban, '*Deliberating on Low Carbon Development*' (2010) 38 Energy Policy 7546-7549 at 7549.

[503] Christopher Flavin, '*Building a Low-Carbon Economy'* Appearing in '*State of the World: Innovations for a Sustainable Economy*' (2008) 84-45 http://www.worldwatch.net/files/pdf/SOWO8_Chapter_6.pdf accessed on 16 September 2013.

widens its share of the market, eventually undercutting the cost of the dominant players and gradually remolding the institutional infrastructure to meet its own needs.

The question that needs to be asked at this stage is whether a consumption-based economy of the EU purely based on renewable energy technologies can be sustained just as fossil fuels have sustained it for so long. As Redgwell pointed out, energy is of vital national importance and is inextricably linked with the ability of each member state to discharge its economic and social functions.[504] This question is being asked, bearing in mind the fact that consumption of green energy is expected to contribute to economic growth.[505] Before answering this question, it may be useful to ponder whether a situation where the EU economy is almost solely based on fossil fuel imports from outside, with the attendant net outflow of cash to pay rising energy bill, is sustainable. This is in addition to the fact that prices of conventional energy sources will continue to fluctuate as known and existing reserves get depleted due to increasing consumption. The statement of the Economic Secretary to the Treasury in the United Kingdom is worth considering. She acknowledged the link between green growth and the economy. During the debate in the House of Commons on 28 June, 2012, she stated that the entire economy needs to be environmentally sustainable to enable the UK to maximise its growth while managing its natural assets sustainably.[506] She further stated that:

> "If we look internationally, we will see that the so-called tiger economies are combining economic policies, subsidies, industrial focus and energy efficiency solutions to build their stronger economies. It is that coordinated model that I propose to the Minister today. Globally, there will be a race for resources, including energy, water and food. Energy consumption will grow by 33% over the next 20 years, with 50% of that growth coming from China and India. Even the Governor of the Bank of England has acknowledged that we must be cautious about our exposure to fossil fuels

[504] Catherine Redgwell, '*Energy, Environment and Trade in the European Community*' (1994) 12 J. Energy & Nat. Resources L. 128 at 140.
[505] Ertugrul Yildirim, Senay Sarac and Alper Aslan, '*Energy Consumption and Economic Growth in the USA: Evidence from Renewable Energy*' (2012) 16 Renewable and Sustainable Energy Reviews 6770-6774.
[506] Hayley Tam and Ben Du Feu, '*Environment: Nothing to See here*' (2012) NLJ 898.

and that they could be considered a risk to financial security. Any country that is serious about future economic competitiveness, not least this one, will ensure that it limits its reliance on fluctuating and politicised energy inputs. Energy security, domestic production and low-input process re-engineering are not, in my view, things that it would be nice to have; they are a total necessity."[507] (emphasis mine).

It may be said that the full cost of the reliance on fossil fuels is actually weighing negatively on the world economy.[508] This may be, in part, because oil and gas producers now spend more on exploratory activities to reach the remaining reserves in otherwise unreachable depths (of course made possible by improvements in technology). The resultant increase in the cost of exploration is reflected in crude oil prices and is eventually passed on to the final consumer as retail prices rise.[509] These exploration costs will continue to increase as consumption rises. Furthermore, it has been observed that, even though cheap oil prices keep transportation costs down, once oil prices start to pass $150 per barrel, it no longer makes economic sense to ship goods half way around the world, as rising energy costs will make globalization enter a long slow decline with transportation costs becoming more of an issue than labour costs.[510] The issue of rising aviation fuel costs and the cost-cutting measures embarked upon by some budget airlines around the world is a pointer to this issue.

Back to the issue of renewable energy technologies, in the first place, hard laws must be put in place to encourage these technologies in view of findings such as that by the US Department of Energy which is to the effect that even incremental improvements in existing conventional energy networks would not be able to meet world energy demands which will be more than double by 2050 without renewable energy

[507] Ibid.
[508] Mikael Hook, Robert Hirsch and Kjell Aleklett, '*Giant Oil Field Decline Rates and their Influence on World Oil Production*' (2009) Vol. 37 Issue 6 Energy Policy 2262-2272.
[509] Aidan Meyler, '*The Pass Through of Oil Prices into Euro Area Consumer Liquid Fuel Prices in an Environment of High and Volatile Oil Prices*' (2009) 31 Energy Economics 867-881.
[510] Perry Sadorsky, '*Some Future Scenarios for Renewable Energy*' (2011) 43 Futures 1091-1104 at 1092.

technologies.[511] The question whether renewable power technologies can function as a base load for the EU system was addressed comprehensively in a 2010 Study by the European Climate Foundation with the conclusion that, both technically and economically, a system with nearly 100% renewable technologies is feasible, predicated on a substantial investment in the transmission backbone.[512] With a large percentage of the funding needed for these technologies coming from the banks, this presents a unique and attractive opportunity for European banks, still recovering from the last recession, to benefit from a transition to a renewable energy-powered economy and the growth of the low carbon technology sector.[513]

A renewable energy-based economy can be the real engine and vital driver of economic growth.[514] The EU, with a population of about 500 million (greater than the combined population of Japan and the United States) has the large market that can offer the necessary returns to scale for the required investments.[515] This is in addition to the fact that investment in green technologies will have a multiplier effect on other subsectors of the European economy as a result of increased demand for goods and services to construct and operate these green technologies.[516]

The European Wind Energy Association, in its 2014 European Statistics released in February 2015, observed that wind power capacity installed by the end of 2014 would produce 284 TW h of electricity in a normal wind year, enough to cover 10.2% of the EU's electricity consumption.[517] Scotland provides a classic example of a potential success story in renewables, with the Scottish government stating that renewables generation in Scotland is enough to power the equivalent of every household, making

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[511] U.S. Department of Energy, '*Basic Research Needs for Solar Energy Utilization*' (2005) 3 at IX http://www.sc.doe.gov/bes/reports/files/SEU_rpt.pdf accessed on 13 September 2013.

[512] Carlo C. Jaeger et al (n. 457) 19.

[513] Simon Whitehouse *et al*, '*Carbon Capital: Financing the Low Carbon Economy*' http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture_Barclays_Carbon_Capital.pdf accessed on 13 September 2013.

[514] CBI, '*The Colour of Growth: Maximising the Potential of Green Business*' <http://www.cbi.org.uk/media/1552876/energy_climatechangerpt_web.pdf) accessed on 13 September 2013

[515] Department for Business Enterprise and Regulatory Reform, '*Europe: It's Your Business – The Economic Case*' (2008) <http://www.europarl.org.uk/resource/static/files/file49880.pdf. accessed on 13 September 2013.

[516] M. Markaki *et al*., '*The Impact of Clean Energy Investments on the Greek Economy: An Input-Output Analysis (2010-2020)*' (2013) 57 Energy Policy 263-275 at 267.

[517] European Wind Energy Association – Statistics - <http://www.ewea.org/statistics/. accessed on 5 April, 2015.

an important contribution to a sustainable economy.[518] Also, the Renewable Energy Policy Network for the 21st Century (REN21), in its 2015 Report, stated that, by 2013, renewable energy technologies were producing 19.1% of global final energy consumption, with increasing growth in generation and capacity.[519]

Research carried out by Cambridge Econometrics found that large scale investments in offshore wind technology, compared with investments in gas powered energy technology, would increase the GDP in the United Kingdom by 0.8% by 2030, generating an additional £20 billion for the economy.[520] Furthermore, Ernst and Young has concluded that investments in wind technology across the EU creates more GDP than gas.[521] Investments in green technologies should particularly boost the economy of the rural areas of the EU (hosts to a large renewable energy potential) which will witness a growth rate due to an inflow of investments and tourism.[522] This should address the anxiety raised by Galoczi who observed that a lot of energy intensive industries are located in these remote areas which are characterized by a high rate of unemployment and which see these companies as being vital to their economies.[523] As such, citing these green technologies close to the energy intensive companies will make them immediate beneficiaries and eliminate the risk of their being forced to pay the penalties associated with carbon emission. It can therefore be said that a low carbon renewable energy economy can equally witness a high level of job creation if not higher than) as that witnessed in the fossil fuel sector.

As for biofuels, the raw materials for its production come mostly from developing countries, with the cost of bringing them to the EU market probably higher than the cost

[518] The Scottish Government http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Facts accessed on 13 September 13, 2013.
[519] REN21, '*Renewables 2015 Global Status Report*' Executive Summary. Available at ren21.net/wp-content/uploads/2015/07/REN12-GSR2015_Onlinebook_low1.pdf. Accessed on 9 June 2016.
[520] Cambridge Econometrics, '*A Study into the Economics of Gas and Offshore Wind*' (2012). A Report for Greenpeace and WWF-UK.
[521] Ernst and Young, '*Analysis of the Value Creation Potential of Wind Energy Policies: A Comparative Study of the Macroeconomic Benefits of Wind and CCGT Power Generation*' (2012).
[522] Janet L. Sawin, *Mainstreaming Renewable Energy in the 21st Century* (WorldWatch Paper 169 2004) 16.
[523] Bela Galgoczi, '*Low-Carbon Economy and Industrial Job: Can we have the Best of Both Worlds?*' Appearing in Bela Galgoczi (ed.), *Greening Industries and Creating Jobs* (ETuI aisbl 2012) 18.

of conventional fuels at present prices.[524] The EU can comfortably depend on biomass supply from some developing countries where its utilization has not reached commercial levels. The associated transportation costs can be minimized if biomass can be sourced from locations where it is concentrated in large quantities and can go through the process of conversion more economically.[525]

## 5.5 EU Third Energy Package and Economic Development

The third energy package of the EU has the potentials to lead to economic development through the promotion of investments in renewable energy technologies. The package has two main directives which are directives 2009/72/EC and 2009/73/EC. Of particular importance is Regulation (EC) No. 714/2009 on cross-border exchanges of electricity. They are examined in detail under chapter eight. This package has the potentials to reduce inherent risks militating against investments in those technologies. The market offers the greatest opportunity for the gains of the 2009 Renewables Directive to be realized as consumers from Britain, for instance, can elect to consume cheaper green energy from Denmark through a central European grid.

On power generation, it has been suggested that governments of member states should embark on the upgrade of the power network across the continent, allowing electricity to be transmitted more efficiently and smartly to match supply and demand across a truly European super grid which would, for instance, link Poland to southern solar energy sources and stimulate economic activities in Spain.[526] The development of critical central energy infrastructure is therefore essential in the development of the internal energy market.

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[524] Rachel Gantz, '*Report: Biofuels Could Displace 5% of World's Gasoline Demand*' (2004) 8 Global Ref. & Fuels Report 11.

[525] Ralph E.H. Sims *et al*, '*Energy Crops: Current Status and Future Prospects*' (2006) 12 Global Change Biology 2054-2076 at 2058. Reviewing the 2005 Report of the International Energy Agency.

[526] Nicholas Stern, '*Europe can Grow by Unleashing a Low Carbon Economy*' (2012) Social Europe Journal http://www.social-europe.eu/2012/05/22821/ accessed on 16 September 2013.

The question that arises here is whether economic incentives put in place by legal instruments in line with EU energy package to aid the development of renewable energy technologies (such as feed-in-tariffs and carbon taxes) are inconsistent with the provisions of Articles 28 and 29 of the Treaty Establishing the European Community which provide as follows:

> Article 28: "Quantitative restrictions on imports and all measures having equivalent effect shall be prohibited between member states
>
> Article 29: "Quantitative restrictions on exports and all measures having equivalent effect shall be prohibited between member states.

The court in *PreussenElektra AG v. Schleswag AG*[527] held that such support mechanisms are useful for the protection of the environment (a fundamental objective of EU policy) as they aid carbon emission reduction efforts and support the transition to a low carbon economy. The court further considered the provision of Article 87(1) of the EC Treaty (ex Article 92), which provides as follows:

> "Save as otherwise provided in this Treaty, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, insofar as it affects trade between Member States, be incompatible with the common market".

In the first place, the court distinguished between 'state aid' and 'support measures' decided upon by the state but financed by private undertakings. Only advantages granted directly or indirectly through state resources are to be considered aid within the meaning of Article 87(1) of the treaty. Therefore economic instruments such as carbon taxes and feed-in-tariffs are not forms of state aid but support measures decided upon by the state to encourage investments in renewable energy technologies. The court therefore held that statutory provisions of a member state which require private electricity undertakings to purchase electricity produced in their area of supply from

[527] Case C-379/98.

renewable energy sources at minimum prices higher than the real economic value of that type of electricity and thereafter distribute the financial burden resulting from that obligation between electricity supply undertakings and upstream private electricity network operators do not constitute state aid within the provision of Article 92(1) of the EC Treaty (now Article 87(1) of the treaty).

The provisions of Article 87(3)(b) and (c) may however be utilized to support the grant of state aids directly from the government to investors in renewable energy technologies. The provisions of Article 87(3)(b) and (c) are as follows:

The following may be considered to be compatible with the common market:

> (b) aid to promote the execution of an important project of common European interest or to remedy a serious disturbance in the economy of a Member State;
>
> (c) aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest;

In line with Article 87(3)(b), a shift from a fossil fuel dependent economy to a renewable energy-based economy is a very critical and important project that deserves direct state aid from government without necessarily going against EU competition laws. Furthermore, in line with Article 87(3)(c), increasing investments in renewable energy technologies within the EU signifies a growing economic activity worth encouraging through direct state aid, especially considering the fact that such sustainable energy sources become competitive and preferable when the environmental externalities of fossil fuel sources are internalized. The European Renewable Energies Federation supports this fact when it stated in its 2012 report that state aids for renewables are made to support the development of a young industry to allow the shift from research and development stage to the large-scale market deployment stage, and that such aids

should be applicable until the technologies mature and can fairly compete in the market.[528]

## 5.6 Internalization of External Costs and Energy Poverty among Consumers

Internalization of the external costs of fossil fuels through legal instruments to encourage consumption of green energy will most certainly lead to high energy bills and the attendant energy poverty among final consumers. This is mainly because the penalty for carbon emission or other forms of pollution arising from fossil fuels is attached to consumption rather than production. As such, the energy companies shift the cost of this penalty to the final consumer, leading to high energy bills. The consolation, however, is that this is a temporary phase necessary to encourage a shift to a low carbon economy powered by renewable energy sources, with the long term benefits far outweighing the initial costs. In fact Krewitt *et al* observed that, from an economic point of view, the internalization of external costs already has benefits as the external costs associated with conventional energy generation and utilization have already exceeded the costs associated with the development of green energy technologies.[529]

Furthermore, a major issue worthy of consideration is the fact that conventional energy prices will continue to fluctuate anyway as reserves dwindle and exploration costs rise. The consumer is therefore left with choosing between two options, with the preferable option being the one that guarantees availability of renewable green energy for present and future generations. Another consolation for the consumer is that some EU governments are already making efforts to reduce the number of subsidies. The government of the United Kingdom, in December 2011, cut subsidies on solar energy

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[528] European Renewable Energies Federation, '*EREF's Reply to the European Commission Public Consultation on State Aid for Environmental Protection*' (2012) http://www.eref-europe.org/attachments/article/88/EREF%20reply%20to%20State%20Aids520consultation%20-%20public.pdf accessed on 14 September 2013.

[529] Wolfram Krewitt and Franz Trieb, '*Beyond Climate Change: Beyond Perspectives for a Global Sustainable Energy Supply*' (2009) 10 Whitehead J. Dipl. & Int'l Rel. 115 at 124. Analyzing the 2008 BMU Report: '*Electricity from Renewable Energy Sources: What does it Cost Us?*'

after a High Court ruling.[530] Furthermore, Eckert and Steitz observed, in the case of Germany, that:

> …the country has been cutting those favourable tariffs in an effort to force the solar industry to lower its costs… and head off steep rises in energy bills for companies and households, which are required by law to pay the FiTs[531]

It has been stated that one of the long term economic benefits is the fact that the volatility of the prices of green technologies is lower compared with the prices of fossil fuel sources, and in this way they are more predictable and economic activity faces less volatility as the exposure to green technologies increases.[532] When the technologies eventually become independent of fiscal instruments, energy bills payable by final consumers should be stable for a relatively long time and not be susceptible to socio-political events happening outside the EU. Furthermore, Johansson has stated that renewable energy technologies will lead to a diversity of energy carriers and suppliers as energy importers would be able to choose from among more producers and fuel types than they do today, and would thus be less vulnerable to monopoly price, manipulation or unexpected disruption of supplies, leading to a stabilization of world energy prices.[533] This is one of the benefits of the third EU Energy Package.

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[530] Marc Roca, '*UK to Push Ahead with Solar Subsidy Cut after Court Rulings*' BLOOMBERG December 22, 2011 http://www.bloomberg.com/news/print/2011-12-21/u-k-to-push-ahead-with-solar-subsidy-cuts-after-court-ruling.html accessed on 9 October 2013.

[531] Vera Eckert and Christoph Steitz, '*UPDATE 2- German Solar Boom Strengthens Critics of Subsidies*. Reuters January 9, 2012 http://www.reuters.com/article/2012/01/09/grid-regulator-solar-idUKL6E8C90YL20120109 accessed on 9 October 2013.

[532] Antonio Cardoso Marques and Jose Alberto Fuinhas, '*Is Renewable Energy Effective in Promoting Growth?*' (2012) 46 Energy Policy 434-442.

[533] Thomas B. Johansson *et al*, '*Renewable Fuels and Electricity for a Growing World Economy: Defining and Achieving the Potential*' (1993) Vol. 4 Issue 3 Energy Studies Review (Article 6) at 203.

## 5.7 Intermittency as a Significant Technical Barrier

A key technical challenge facing renewable is intermittency, with solar generators, for instance, only producing power when the sun is shining.[534] Suberu et al identified a solution in Energy Storage Systems (ESSs).[535] They defined ESS as a method of transforming electrical energy from the electrical power network into a form that can be stored for converting to electrical energy when needed.[536] They also found out that the ESS is particularly more economically rewarding for autonomous/distributed energy generation units thereby resulting in an economic advantage over the alternatives such as grid expansion.[537]

In addition, Stram also identified solutions in the flexibility of the grid to accommodate variable power sources and trading with other electricity grids.[538] These are some of the issues covered under the EU Third Energy package examined under Chapters Four and Eight. Smart grids will also go a long way in addressing the accommodation of variable renewable energy sources into the grid.[539]

## 5.8 Conclusion

The current centralized energy model, based on conventional energy sources, has been developed under the assumption that a direct relationship exists between prosperity and the increase in energy consumption.[540] However, the transition to a low carbon

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[534] Gautam Gowrisankaran, Stanley S. Reynolds and Mario Samano, 'Intermittency and the Value of Renewable Energy' (May 6, 2015). Available at u.arizona.edu/~gowrisan/pdf-papers/renewable-intermittency.pdf. Accessed on 20 October, 2016.

[535] Mohammed Yekini Suberu, Mohd Wazir Mustafa and Nouruddeen Bashir, 'Energy Storage System for Renewable Energy Power Sector Integration and Mitigation of Intermittency' (2014). 35 Renewable and Sustainable Energy Reviews 499-514.

[536] Ibid.

[537] Ibid.

[538] Bruce N. Stram, 'Key Challenges to Expanding Renewable Eenrgy' (2016) 96 Energy Policy 728-734 at 730.

[539] ISGAN Synthesis Report, 'The Role of Smart Grids in Integrating Renewable Energy' (May 2015). Available at http://www.nrel.gov/docs/fy15osti/63919.pdf. Accessed on 20 October 2016.

[540] Itziar Martinez de Alegria Mancisider *et al*, '*European Union's Renewable Energy Sources and Energy Efficiency Policy Review: The Spanish Perspective*' (2009) 13 Renewable and Sustainable Energy Reviews 100-114.

economy through renewable energy technologies is increasingly becoming an acceptable alternative pattern of economic growth.[541]

Renewable energy technologies have a major role to play in ensuring economic development in the march towards sustainable development. One major advantage they have over conventional energy sources is that, while the latter have both economic and social costs, they have mostly economic costs which are dwindling as the technologies evolve. Existing conventional energy producers need not panic as the transition to a low carbon renewable energy economy is a gradual process which they can key into with all the opportunities involved. Their current investments in conventional energy sources are therefore secure. Investors in other sectors of the economy can take advantage of support schemes under fiscal and economic policies which have been sanctioned as being compatible with EU competition laws.

Investments in renewable energy technologies need to be made today for a better tomorrow. They are the tools that will prevent the collapse of the world economy (which could be imminent in view of dwindling conventional energy reserves) and launch it into another stage of the evolutionary scale of economic development. In other words, the economy of the immediate future, starting from the 21st century, will be built on renewable energy technologies, the way fossil fuels powered the industrial revolution of the 18th century. The Intergovernmental Panel on Climate Change (IPCC), while recognizing the economic and social benefits of green technologies and their link to development, also stated in its 2011 Special Report that such technologies have the capacity to meet world energy demand.[542] Therefore, while these technologies are believed to render a social good which is carbon emission reduction from the angle of climate change,[543] from the economic angle, they also render an economic benefit and lay a solid foundation for the economic development of member states.

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[541] Hu Yuan, Peng Zhou and Dequn Zhou, '*What is Low-Carbon Development? A Conceptual Analysis*' (2011) 5 Energy Procedia 1706-1712 at 1709.

[542] IPCC Special Report, '*Renewable Energy Sources and Climate Change Mitigation*' (Cambridge University Press, 2012) http://srren.ipcc-wg3.de/report/IPCC_SRREN_Full_Report.pdf accessed on 10 September 2013.

[543] Peter J.G. Pearson *et al*. (n. 452).

It has been shown that the private sector has nothing to fear in the evolution of a sustainable energy policy for the EU, even as they take advantage of the various regulatory instruments designed to provide support for their investments in green technologies. What this means in effect is that a gradual shift from investments in conventional energy technologies to low carbon renewable/sustainable energy technologies will not compromise economic development in any way. In essence, the economic aspect of sustainable development is not in any way sacrificed for the environmental aspect of it.

The much needed shift to an economy powered by renewable energy technologies is a major economic factor shaping real investment decisions across all the major sectors of the EU economy and economic policy makers in the region need to understand this and help improve on the necessary regulatory and financial architecture to underpin the low carbon/renewable energy transition to avoid significant risks to the EU's energy and economic security.[544] This is against the backdrop of the fact that, if no measures are taken in transiting to a sustainable energy economy, then in the next twenty to thirty years, the EU's dependence on imported energy will increase from 50% to 70%, exposing many sectors of the European economy to price instability.[545] This is in addition to the fact that non-conventional energy sources such as shale oil and tar sands may not sustain the economies of countries currently enjoying their benefits for too long.

Furthermore, the current centralized energy model based on mass consumption of energy for economic growth needs to be reviewed in favour of a decentralized model which allows for sustainable utilization of energy resources through the development of renewable energy sources. A 'centralized energy model here refers to the concentration of power generation in the hands of a few monopolies and is associated with the generation of energy from conventional sources. Renewable energy sources are more

[544] Nick Mabey, '*Europe Must Complete its Low Carbon Transition*' (2011) E3G Briefing Paper http://www.e3g.org/docs/E3G_Europe_must_complete_its_low-carbon_transition.pdf accessed on 11 September 2013.

[545] Charles Nicholson and Paul Rutter, '*Towards a Low Carbon Future*' http://www.aspeninstitute.org/sites/default/files/content/docs/ee/NicholsonEEEClimate.pdf at 110 accessed on 11 September 2013.

suitable for a decentralized energy model through means such as distributed power generation. This could lead to more economic empowerment through ownership of small scale energy generation infrastructure. The EU Third Energy Package is very relevant in this regard. The former model is unsustainable and risks endangering the economy of the EU. The latter model allows for the maximization of economic growth needed for sustainable development as it establishes a new energy model based on sustainable consumption of energy. A decentralized energy model will be of particular benefit to individuals who wish to take advantage of regulatory instruments by investing in renewable energy technologies. In all, could be a ‘win-win’ situation for corporate organizations and individuals.

However, the EU Third Energy Package that is supposed to be the engine room of cross-border exchange of electricity has not really crystallized into the much needed central European grid for the benefit of renewable energy. In other situations, its effect has been felt more by conventional energy producers.

# CHAPTER SIX

# LEGAL FRAMEWORK FOR MAKING RENEWABLE ENERGY TECHNOLOGIES ENVIRONMENTALLY FRIENDLY IN THE EU

## 6.1 Introduction

Chapter Six examines the legal framework relevant to the development of renewable energy technologies and how present and future generations stand to gain immense environmental benefits in the drive towards sustainability in energy production and consumption. Environmental issues are very fundamental in any analysis of the concept of sustainability as activities which continually degrade the environment are not sustainable.[546] Achieving sustainable development, in part, requires the supply and utilization of energy from clean sources with little or no environmental impacts.[547] Environmental issues also cover energy utilization as it pertains to the need to ensure that a reasonable level of reserves is left behind for future generations for purposes of development. Linkages between energy use and environmental quality have always been apparent from the deforestation caused by usage of firewood in pre-industrial societies to the high levels of local air and water pollution that have commonly accompanied phases of industrialization due to fossil fuel combustion and consumption.[548]

Most discussions on the environmental aspect of sustainable development relating to the energy sector have been focused on the environmental effect of fossil fuels exploration and consumption on the environment. Salzman observed that, although there was a revolution in environmental law in the 1970s, the focus was mostly on pollution control, while major contributors to environmental hazards such as

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[546] Ibrahim Dincer and Marc A. Rosen, '*Thermodynamic Aspects of Renewables and Sustainable Development*' (2005) 9 Renewable and Sustainable Energy Reviews 169-189 at 178.

[547] Ibrahim Dincer and Marc A. Rosen, '*Exergy as a Drive for Achieving Sustainability*' (2004) 1(1) International Journal of Green Energy 1-19.

[548] InterAcademy Council, '*Lighting the Way Toward a Sustainable Energy Future*' (2007) http://interacademycouncil.net accessed on 31 October 2013.

consumption were ignored.[549] The working definition of sustainable development by the Brundtland Commission has widened the scope of environmental development to encompass sustainable consumption of energy resources. Critics of renewable energy technologies may however argue that these technologies also have negative environmental impacts worthy of consideration. The environmental externalities associated with conventional energy sources and to which costs are sought to be attached will be examined in relation to renewable energy technologies.

This chapter looks at the environmental benefits of renewable energy technologies and proves that they can actually have a positive effect on the environment with the aid of the evolving legal framework. Bilen *et al*, on their part, have stated that, in order to fully appreciate the environmental benignity of green energy sources, there has to be a comparative analysis of the 'external costs' of conventional energy sources and the 'external costs' of green energy sources.[550] Such a comparative analysis will therefore be the thrust of this chapter. These 'costs' are actually environmental externalities.

In carrying out the comparative analysis, this chapter is not focusing on the benefits of renewable energy technologies to climate change mitigation, although it is a major factor for renewable energy development and will be mentioned. Rather there will be an analysis of the perceived environmental challenges associated with these technologies and a determination on whether those challenges have been overestimated or not. In doing this, there will be a measure of comparison of the environmental impact of conventional energy sources and that of renewable energy technologies to enable a better appreciation of the positive impact of the latter on the environment. This is necessary because, as Dincer rightly pointed out, achieving sustainable development in part requires the measurement and comparison of the environmental impact of all

[549] James Salzman, '*Sustainable Consumption and the Law*' (1997) 27 Envtl. L. 1243 at 1244.
[550] Kadir Bilen *et al*., '*Energy Production, Consumption and Environmental Pollution for Sustainable Development: A Case Study in Turkey*' (2008) 12 Renewable and Sustainable Energy Reviews 1529-1561.

human activities.[551] This comparison is particularly seen in the Life Cycle Assessment Technique which is discussed later in the chapter.

It will be shown that the regulatory regime governing conventional energy sources in the EU have been largely ineffective, while the dedicated legal tools put in place to guide the development of renewable energy technologies have the potential to deliver on environmental development. At the end of the chapter, it will be shown that, notwithstanding the perceived environmental challenges associated with renewable energy technologies, they have more potential at ensuring environmental development faster than conventional energy technologies.

## 6.2 Some Evolving Laws on the Environmental Concerns Associated with Renewable Energy Technologies.

### 6.2.1 Planning Laws and Renewable Energy Technologies

Planning laws have greatly assisted in addressing a lot of the environmental concerns arising from the utilization of renewable energy technologies. The observation of Crawford and French aptly encapsulates the role planning laws play in ensuring that renewable energy technologies are agents of environmental development:

> The balance between the rights of property and of public goods lies at the heart of planning legislation, which allows development decisions to be expedited outside the courts and through processes which are designed to be democratically accountable.[552]

What can be implied from here is that there is a need to balance the property rights of energy producers and governments in the EU with the public good. The property rights here are the rights to locate a green energy infrastructure in a particular environment

[551] Ibrahim Dincer, '*Environmental Issues: I-Energy Utilization*' (2001) 23(1) Energy Sources Part A: Recovery, Utilization and Environmental Effects 69-81.

[552] Jenny Crawford and Will French, '*A Low-Carbon Future: Spatial Planning's Role in Enhancing Technological Innovation in the Built Environment*' (2008) 36 Energy Policy 4575-4579.

pursuant to existing title documents, while the public good is the need to ensure that such rights are exercised in an environmentally beneficial manner. This however does not remove the fact that locating a renewable energy project in a particular place may actually be a public good. Because of the fact that most renewable energy technologies are located onshore, planning laws are of a great significance. They however perform a very important environmental function which is largely absent in the fossil fuel industry. While Wildermuth observed that majority of the environmental regulations in the fossil fuel industry take effect from the processing stage/ refinement stage,[553] planning laws ensure that environmental matters are taken into consideration even before a renewable energy project takes off. In a scathing criticism of environmental regulation in the fossil fuel industry (which is absent in the regulation of renewable energy technologies, thanks to planning regulation), Wildermouth said:

> It focuses on the end of processes, not the beginning causes. This means that environmental law typically is not concerned with preventing pollution at the front end of the process, and only rarely asking questions about the inputs to any particular process. It generally does not ask why waste is produced or query the life cycle of any particular process over time. It only regulates the waste that is produced.[554]

Large green technology projects are located in remote areas or areas with less human activities. Locating them in built up areas such as towns and cities may present considerable environmental challenge. Day *et al* observed that there are design issues in built up areas for all renewable energy technologies such as available roof area, fuel storage capacity or incapacity with other technologies.[555] One reason for this is the fact that most existing buildings in Europe today were built at a time when environmental issues and issues of energy security were not critical. Buildings worldwide account for

[553] Amy J. Widermuth, '*Is Environmental Law a Barrier to Emerging Alternative Energy Sources?*' (2009-2010) 46 Idaho L. Rev. 509 at 528.
[554] Ibid.
[555] A.R. Day *et al*., *The Use of the Planning System to Encourage Low Carbon Energy Technologies in Buildings* (2009) 34 Renewable Energy 2016-2021 at 2018.

as much as 45% of energy consumption today mainly due to these design flaws.[556] In Europe, buildings are responsible for approximately 40% of total annual energy consumption.[557]

There are existing laws which serve to provide incentive for those who may wish to embark on renewable energy projects. The National Planning Policy Framework encourages the development of renewable energy by mandating local authorities to identify the local potential for renewable energy generation when drawing up local plans.[558] Some small scale renewable energy projects are permitted to be installed as attachments to buildings under local laws. Such projects act as back up to conventional energy sources and provide an additional source of revenue to house owners. For instance, the Town and Country Planning (General Permitted Development) Order 1995, allows some types of developments to be put up on land without the need for planning approval. This type of exemption is also in operation in Ireland under section 4 of the Planning and Development Act, 2000. Under this section of the Act, certain small renewable energy projects are exempted from planning approvals to hasten their development. The bottom line however is that, before planning approvals are granted, the proposed renewable energy project is scrutinised, especially on its environmental impact, before approval is given.

### 6.2.2 Environmental Impact Assessment (EIA)

Preamble 2 of the EU Environmental Impact Assessment Directive (2011 Directive on the assessment of the effects of certain public and private projects on the environment) recognizes the principles behind Article 191 of the Treaty on the Functioning of the European Union, one of which is that preventive action should be taken and that effects on the environment should be taken into account at the earliest possible stage in all

[556] Declan Butler, *Architects of a Low-Energy Future* (2008) Vol. 452 Nature Publishing Group (News Feature) 520.
[557] Constantinus A. Balaras *et al., Heating Energy Consumption and Resulting Environmental Impact of European Apartment Buildings* (2005) 37 Energy and Buildings 429-447.
[558] See Planning Practice Guidance for Renewable and Low Carbon Energy (July 2013). Available at https://www.gov.uk/government/uploads/attachment/data/file/225689/Planning_Practice_Guidance_for_renewable_energy_and_low-carbon_energy. Accessed on 14, April, 2016.

technical planning and decision making processes.[559] Crowhurst and Davidson succinctly captured the important role an EIA plays in environmental development through important projects such as renewable energy technologies when he stated that:

> The key factor in the EIA is the emphasis on using the best available sources of objective information and in carrying out a systematic and holistic process, which should be bias-free and allow the local planning authority and the whole community to properly understand the impact of the proposed development. The EIA should lead to better standards of development but in some cases will prevent the development from happening. Where developments do go ahead EIAs should help to propose mitigation measures.[560]

What this means in effect is that renewable energy technology projects are expected to have passed through the EIA process prior to planning approvals, and as such the risks of adverse environmental impacts must have been greatly minimized. In the United Kingdom, for instance, developers of the technology will be required to come up with an Environmental Statement, which is the result of the EIA, and an Environmental Management Plan which specifies steps that would be taken to address issues like the effect of the project on protected habitats and noise pollution.

It may be said at this juncture that similar processes made for the conventional energy sources have not done much to eliminate the environmental hazards associated with such energy sources. This is because most EIAs for the fossil fuel industry are limited to the early stages of the exploration process, with the production and consumption stages largely left out. Several analysts have applied a broader assessment tool which is the Life Cycle Assessment (LCA) to bring out the environmental development potentials of green technologies.[561] The LCA technique is applied to new technologies before they

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[559] Directive 2011/92/EU http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:026:0001:0021:EN:PDF accessed on 19 October 2013.

[560] Georgina Cowhurst and Simone Davidson, '*Planning: A Roadblock to Renewable Energy in the UK*' (2008) 10 Envtl. L. Rev. 181 at 185.

[561] Martin Pehnt, '*Dynamic Life Cycle Assessment (LCA) of Renewable Energy Technologies*' (2006) 31 Renewable Energy 55-71.

enter the market to investigate their environmental impact and environmental superiority over competing or existing technologies.[562]

Applying this technique, Pehnt found out that greenhouse gas emissions and material throughput from consumption of renewable energy systems (throughput) are significantly lower compared to those of conventional systems.[563] Also, Varun *et al* used the LCA technique for assessing the environmental impact of renewable energy technologies from the production/fabrication stage to the decommissioning stage and thereafter made a comparison with some conventional energy technologies, concluding in favour of renewable energy technologies having far lesser environmental impact.[564]

The LCA technique is also useful in a comparative analysis of the land use intensity of renewable energy technologies and conventional energy technologies. Renewable energy sources may after all have less land use intensity than fossil fuels for instance, although there is a tendency for analysts to argue otherwise. Turney and Fthenakis used a comparative analysis for the life cycles of photovoltaic power and coal power plants and observed that, as the time of a solar power plant gets longer, the land transformation capacity is unchanged, but the land occupation per energy generated decreases.[565] The coal power life cycle, on the other hand, requires mining to obtain the fuel through strip mining which increases the intensity on land.[566] After the expiration of the useful life of a green technology, all that is required is an environmentally compliant decommissioning of the technologies and their replacement with new ones on the same land, with no subsequent increase in land intensity. EU EIA provisions do not require a comparison between new and existing technologies, but are rather focused on the particular technology that is being assessed. This makes the LCA technique to be

[562] Ibid.
[563] Ibid 59.
[564] Varun I.K., Bhat and Ravi Prakash, '*LCA of Renewable Energy for Electricity Generation Systems – A Review*' (2009) 13 Renewable and Sustainable Energy Reviews 1067-1073.
[565] Damon Turney and Vasilis Fthennakis, '*Environmental Impacts from the Installation and Operation of Large-Scale Solar Power Plants*' (2011) 15 Renewable and Sustainable Energy Reviews 3261-3270 at 3264.
[566] Ibid.

broader as it also involves a definition of goals and scope, inventory analysis, impact assessment and interpretation of results.[567]

## 6.3 Renewable Energy Technologies and the Environment in Context

Can the use of renewable energy technologies help reduce environmental damage associated with energy production and consumption and achieve sustainability?[568] Kemp succinctly captured the importance of renewable energy technologies to the sustainable development of any economy (i.e. the environmental aspect of the concept) when he stated that:

> Certainly, the installation of pollution control devices and reuse systems, the use of more environmentally benign materials, and the reformulation of existing technologies are necessary if we are to achieve a sustainable economy. However, such changes alone will be largely insufficient for achieving the ultimate goal of sustainable development. To achieve that, more fundamental changes in technology are needed, such as a shift away from hydrocarbon-based energy supply…towards the use of renewables…[569]

What this means in effect is that achieving sustainability in the environmental subsystem goes beyond the enforcement of environmental laws (for instance laws on pollution control, recycling or energy efficiency). In addition, there is a need for less reliance on conventional energy sources with a gradual shift to renewable energy technologies. The Shell Petroleum Development Company realized this fact and

[567] A.F. Sherwani, J.A. Usmani and Varun, '*Life Cycle Assessment of Solar PV Based Electricity Generation Systems: A Review*' (2010) 14 Renewable and Sustainable Energy Reviews 540-544.
[568] Ibrahim Dincer *et al* (n. 546) at 178.
[569] Rene Kamp, '*Technology and the Transition to Environmental Sustainability: The Problem of Technological Regime Shifts*' (1994) 26(10) Futures 1023-1046 at 1024.

foresaw an exciting environmental challenge in moving from pollution control to the development of innovative clean technologies.[570]

Environmental law experts have also highlighted the important role renewable energy technologies play in the evolutionary scale of environmental development. Heaton and Banks stated that:

> The pivotal place new technology holds in solving environmental problems has by now assumed the status of an almost-conventional wisdom. In an arena not noted for consensus, the worldwide community concerned with environmental policy is in remarkable agreement about the need for a new generation technology …[571]

As far back as 2001, world leaders at the G-8 Leaders' Summit in Genoa in also recognized the role of these technologies to sustainable development through the environmental subsystem of the concept when they issued a communique to the effect that:

> We recognize the importance of renewable energy for sustainable development, diversification of energy supply, and preservation of the environment. We will ensure that renewable energy sources are adequately considered in our national plans and encourage others to do so as well. We encourage continuing research and investment in renewable energy technology throughout the world[572] (emphasis mine)

[570] Mark Moody-Stuart, '*New Technologies Responding to Environmental Issues*' (1996-1998) 2 Inter Alia 20.
[571] George R. Heaton Jr. and R. Darryl Banks, '*Toward a New Generation of Environmental Technology*' (1997) J. INDUS. ECOLOGY at 23-24.
[572] Communique from the G-8 Leaders' Summit, Genoa, July 2001 http://http://www.98.utoronto.ca/summit/2001genoa/finalcommunique.htlm accessed on 17 October 2013.

## 6.4 Harmful or not?

### 6.4.1 Do Renewable Energy Technologies have Environmental Hazards?

Before answering this question, it is useful to state from the outset that fossil fuels that currently power the world economy are associated with environmental hazards which threaten present and future generations, including air pollution, particulates and heavy metals that pollute lands and water bodies.[573] Ecological economists have said that the root cause of the earth's degradation can be traced to the beginning of the industrial revolution when there was a shift from renewables to fossil fuels, with the attendant breakdown in the link between production, society and nature.[574] It is however strange that a resort to alternative sources of energy such as renewable energy technologies has also been criticised by environmentalists who have opposed these technologies on environmental grounds. The main issue therefore is whether the perceived environmental hazards are substantial enough to nullify any attempt at utilizing them. If so, are there other sources of energy that would be free of opposition from environmentalists?

Fischer and Preonas argue that renewable energy technologies have environmental effects which can be likened to the 'external costs' associated with fossil fuels.[575] For instance, it has been stated that although the solar photovoltaic industry has the potential to provide enormous environmental benefits, the solar panels use extremely toxic materials or materials with unknown health and environmental risks if they are not disposed of properly when they reach the end of their useful lives.[576] It may however be said that these so called environmental costs are in no way comparable with those of fossil fuels, and can be conveniently managed by the ecosystem. For instance, the

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[573] A.G. Chmielewski, '*Environmental Effects of Fossil Fuel Combustion*.' Appearing in Jose Goldemberg (ed.), '*Interactions: Energy/Environment*' (Encyclopedia of Life Support Systems). (EOLSS Publishers, 2009).

[574] Adebayo Adaralegbe, '*Energy, Economic Development, the Environment and Effective Global Governance: An Introduction*' (2005) 8 International Energy Law and Taxation Review 185-192.

[575] Carolyn Fischer and Louis Preonas, '*Combining Policies for Renewable Energy: Is the Whole less than the sum of its Parts?*' (2010) 4 International Review of Environmental and Resource Economics 51-92.

[576] Silicon Valley Toxics Coalition, '*Toward a Just and Sustainable Solar Energy Industry*' (2009) http://www.svtc.org//wp-content/uploads/Silicon_Valley_Toxics_Coalition_Toward_a_Just_and_Sust.pdf at 25. accessed on 17 October 2013.

concerns raised by the Silicon Valley Toxics Coalition[577] are being addressed though research and development as photovoltaic devices now use semi-conductor materials such as silicon to convert sunlight to electricity and which produce no emissions while in operation. Also, efforts are ongoing to develop more resource-efficient semi-conductor materials and improved device designs which improve product quality.[578] Researchers are still busy looking for ways to apply non-toxic materials, reduce throughput materials consumption and as such production costs.[579]

Research and development can lead to improvements in these technologies, making them more environmentally benign. However, in view of institutional and political challenges militating against renewable energy technologies, the role of the law is immense, as these environmental innovations cannot arise solely through business and market incentives in the absence of stringent environmental regulation and specific technological policies within the EU.[580] This issue can be examined against the backdrop of the fact that most of the so called environmental hazards associated with green technologies may after all not be such. For instance, Fisher and Brown stated that the primary obstacles to wind farm development are sociopolitical (rather than environmental) and reflect the inability of planning laws to reconcile local concerns with what some consider being the national interest.[581]

Research and development, aided by legal tools, should lead to improvements in the environmental standards of renewable energy technologies. Research and development is an ongoing process in the evolution of these technologies as the few environmental challenges are overcome. For instance, this has led to innovations in the area of biofuel production. Chynoweth *et al* observed that methane can be produced from anaerobic

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[577] ibid.

[578] Stanley R. Bull, '*Renewable Energy Today and Tomorrow*' http://ieeexplore.ieee.org/stamp/stampjsp?tp=&arnumber=940290 accessed on 17 October 22, 2013.

[579] Dexter Johnson, '*Perovskite Solar Cell Production Gets Environmentally Friendly*' IEEE Spectrum (14, July, 2015) available at spectrum.ieee.org/nanoclast/green-tech/solar/perovskite-solar-cell-production-gets-environmentally-friendly. Accessed on 12 April, 2016.

[580] Sudi Apak, Erhan Atay and Gungor Tuncer, '*New Innovative Activities in Renewable Energy Technologies and Environmental Policy: Evidence from an EU Candidate Country*' (2012) 58 Procedia – Social and Behavioral Sciences 493-502 at 501.

[581] Janet Fisher and Katrina Brown, '*Wind Energy on the Isle of Lewis: Implications for Deliberative Planning*' (2009) Vol. 41 Environment and Planning A 2516-2536.

digestion of energy crops and organic wastes and then used to provide clean fuel with reduced environmental hazards.[582] Research and development in biofuels production has been greatly aided by the stringent provisions of the 2009 Renewables Directive which contain extensive provisions on the sustainability requirements for biofuels production. This will be looked at under chapter eight.

Renewable energy technologies eliminate the problems of chemical pollution of land and water bodies associated with conventional energy sources. For instance, chemicals are used at various stages of the life cycle of an oil well, from the exploration stage to the production stage, including the process of resuscitating a well that has been plugged for a while. There are various legal tools at the EU level such as the Offshore Combustion Installations (Prevention and Control of Pollution) Regulations, 2001, the Offshore Chemical Regulations of 2002, the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005. They seek to control environmental and atmospheric pollution associated with conventional energy sources and have gone a long way. But they may not have completely eliminated associated environmental problems.[583] Renewable energy sources are considerably safer for the population, properties and natural resources in case of an accident or natural disaster than conventional energy sources, making the risks of the former lesser than those of the latter.[584]

### 6.4.2 Landscaping and Visual Impact Issues

Arguably, it may be said that renewable energy technologies tend to require more land area than conventional energy technologies. For instance, it has been observed that, while about 640-1280 acres of land would be needed to produce 1000 megawatts of

[582] David P. Chynoweth, John M. Owens and Robert Legrand, '*Renewable Methane from Anaerobic Digestion of Biomass*' (2001) 22 Renewable Energy 1-8.
[583] J. Pinedo, R. Ibanez and A. Irabien, '*A Comparison of Models for Assessing Human Risks of Petroleum Hydrocarbons in Polluted Soils*' (2014) 55 Environmental Modelling and Software 61-69.
[584] Gonzalo Escribano Frances, Jose Maria Maria –Quemada and Enrique San Martin Gonzales, '*RES and Risk: Renewable Energy's Contribution to Energy Security. A Portfolio-based Approach*' (2013) 26 Renewable and Sustainable Energy Reviews 549-559 at 551.

power from a coal plant, at least 6,000 acres of land would be needed to produce the same amount from a solar power plant.[585] This raises issues of landscaping and visual impact which are seen as environmental challenges, including but not limited to degradation of the natural habitat and disruption of flow of underground water. Also, it has been said that vegetation clearing for activities including site preparation and access road construction could impact negatively on wildlife habitat.[586] It may however be observed at this point that the issue of conventional energy sources requiring less land areas than green energy sources is debatable, especially in an area where most energy infrastructure are offshore. Onshore conventional energy infrastructure (including upstream, midstream and downstream infrastructure) equally take up a lot of land space. The case of Canada where tar sand activities take place on land, with the attendant land intensity and distortion of the ecosystem is a classic example.[587] In Europe, fracking is severely restricted due to opposition due to identified environmental concerns such as Europe's high population density in relation to land area to be utilized, contamination of water resources, high water usage and gas leakages.[588]

Omer observed that, because renewable energy sources are geographically diffuse, their ability to match demand is determined by adoption of the following two approaches:

- the utilization of a capture area greater than that occupied by the community to be supplied;
- or the reduction of the community's energy demands to a level commensurate with the locally available renewable sources.[589] In addressing the second approach, it can be quickly said that such a community may not need to reduce

[585] Robert Glennon and Andrew M. Reeves, '*Solar Energy's Cloudy Future*' (2010) 1 Ariz. J. Envtl. L. & Pol'y 91 at 103-104.
[586] US Department of Energy and U.S. Department of Interior, DES 10-59, DOE/EIS-0403, '*Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States*' (2010) 5-67.
[587] Sonia Yeh *et al*., '*Past and Future Land Use Impacts of Canadian Oil Sands and Greenhouse Gas Emissions*' (2015) Institute of Transportation Studies/UCDavis Reseach Report. UCD-ITS-RR-15-01.
[588] Lorenzo Cremonese *et al*., '*Shale Gas and Fracking in Europe*' (2015) Institute for Advanced Sustainability Studies (IASS) Fact Sheet. Available at iass-potsdam.de/sites/default/files/files/shale_gas_and-fracking_in_europe.pdf> accessed on 12 April, 2015.
[589] Abdeen Mustafa Omer, '*Energy, Environment and Sustainable Development*' (2008) 12(9) Renewable and Sustainable Energy Reviews 2265-2300 at 2267.

its energy demands if its green energy facility is connected to a central grid that enables it to enjoy additional supplies of energy from external sources. This is in line with the spirit and intent of the EU Third Energy Package which encourages interconnectivity between different energy sources.

The first approach raises the issue of landscaping and visual impact of these technologies on the environment. Landscaping issues have stalled the development of some green technologies. For instance, in Wales, United Kingdom, a plan by Bio E PLC to build a biomass power plant in Coedbach Llanelli was denied planning approval because of the opposition by the local council which voiced its concerns about its effect on the long-term regeneration plans of the community and the fact that any industrial reconfiguration of the site would have a negative impact on the landscape (this was apart from the issue of emissions from the plant which was also raised).[590] Also, in Scotland, the Buchan Wind Farm Action Group vehemently opposed the siting of a wind farm on land near Peterhead because some of the turbines would be within a few hundred metres of residential areas, and as such the visual impact of the structures would negatively affect the residents.[591] Planning laws now stipulate the minimum distance between turbines and the nearest residential area.

Maxwell observed that renewable sources such as wind and solar power tend to be easiest to capture in large open areas, which can overlap with open scenic areas and parklands.[592] He further observed that, in order to lessen local opposition, wind developers have attempted to mitigate the negative impact of their projects, for instance by hiring artists to try and make the turbines look 'artsy instead of industrial.'[593] In Scotland, a method of addressing landscaping/visual impact issues has been developed. Developers of the technology will need to visit the Scottish Natural Heritage, (SNH) which is the Scottish Government's advisor on landscape matters. The SNH

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590 http://www.llaneli-rural.gov.uk/downloads/policies_e/consultation_responses/PlanningApplications/15_08_2007.pdf accessed on 17 October 2013.

591 Peter Strachan and David Lal, '*Wind Energy Policy, Planning and Management Practice in the UK: Hot Air or a Gathering Storm?*' (2004) 38(5) Regional Studies 549-569 at 561.

592 Veery Maxwell, '*Wind Energy Development: Can Wind Power Overcome Substantial Hurdles to Reach the Grid?*' (2012) 18 Hastings W. Nw. J. Envtll. L. & Pol'y 323 at 329 (Quoting Adrian Pearson 2008).

593 Ibid.

assesses the impact of the project on the landscape through a Landscape and Visual Impact Assessment and can, in the process, help with the design and visualization of the project through its Wind Farm Foot Print Maps.[594] This is in line with the provisions of the Strategic Environmental Assessment Directive 2001/42/EC which is applied in Scotland through the Environmental Assessment (Scotland) Act 2005 and the Environmental Assessment of Plans and Programmes Regulation 2004.[595] The Directive provides for mandatory environmental assessment before projects including energy projects are carried out.

### 6.4.3 Raw Materials Throughput and Decommissioning

Two major environmental challenges facing renewable energy technologies are the issues of throughput that go into the manufacturing process of these technologies and the environmental hazards posed by those whose useful lives have passed and are overdue for decommissioning. On the throughput of raw materials in the conventional energy industry, it is possible that fossil fuel technologies use even more materials during the construction process. These conventional energy technologies pose even more problems when they have passed their useful lives and are ready to be decommissioned. The difficulty in ensuring a 100% decommissioning of such facilities was recognized by the OSPAR Convention (of which the European Commission is a member, representing the EU) through its Decision 98/3 of July 1998.[596]

It has been observed that the construction of larger wind turbines will require large amounts of bulk materials such as steel and concrete during construction/fabrication.[597] However, Jacobson and Delucci are of the opinion that there do not appear to be

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[594] http://snh.gov.uk/planning-and-development/renewable-energyresearch-dataandtrends/trendsandstats/windfarm-footprint-maps> accessed on 17 October 2013.

[595] Scottish Natural heritage, '*Guidance – Assessing the Cumulative Impact of Onshore Wind Energy Developments*' (2012) http://www.snh.gov.uk/docs/A675503.pdf accessed on 8 April, 2015.

[596] 2354 UNTS 67; 32 ILM 1069 (1993). Available at http://www.ospar.org/ accessed on 14 October 2013.

[597] U.S. Department of Energy, '*Energy Efficiency and Renewable Energy, 20% Wind Energy by 2030, Increasing Wind Energy's Contribution to U.S Electricity Supply*' DOE/GO-102008-256 Washington D.C. http://20percentwind.org/20percent_wind-energy_report-revOct08.pdf accessed on 14 October 2013.

significant environmental or economic constraints as the major components of concrete – gravel, sand and limestone – are widely abundant, and concrete can be recycled and reused.[598] They further observed that, although the earth does have a somewhat limited reserve of economically recoverable iron ore, the steel used to make towers, nacelles and rotors for wind turbines should be virtually 100% recyclable. On the utilization of water in the production process, it is possible that the rate of water used by conventional energy sources such as tar sands and shale oil and gas exploration could be higher than that used by renewable energy technologies.[599] For instance, water usage for wind turbines is lower than that of conventional power plants - while the latter may use 1.481/kWh, the former uses only 0.0041/kWh.[600]

It must however be said that, though the laws on decommissioning both at the EU and national levels, such as the OSPAR 1992 Convention and the Energy Act 2008 in the UK are mostly focused on offshore petroleum facilities, most renewable energy projects are located onshore. Mere reliance on a programme for decommissioning presented at the pre-planning approval stage should not be enough to take care of the possible challenges that may arise from decommissioning. As renewable energy technologies become more pronounced, there is a need for legal instruments to take care of decommissioning of renewable energy projects. Even though OSPAR issued guidelines governing the decommissioning of offshore renewable energy installations, including the removal of cables,[601] the fact still remains that most renewable energy projects are located onshore. It may however be observed that, during the decommissioning process, wastes from the latter are not toxic and have no damageable impact on the

[598] Mark Z. Jacobson and Mark A. Delucci, '*Providing all Global Energy with Wind, Water and Solar Power, Part 1: Technologies, Energy Resources, Quantities and Areas of Infrastructure and Materials*' (2011) 39 Energy Policy 1154-1169 at 1161.

[599] Ed Struzik, '*With Tar Sands Development, Growing Concern on Water Use*' (2013) Yale Environment 360 http://e360.yale.edu/feature/with_tar-sands_development_growing_concern_on-water_use/2672/ accessed on 10 April, 2015.

[600] R. Saidur *et al*, '*Environmental Impact of Wind Energy*' (2011) 15 Renewable and Sustainable Energy Reviews 2423-2430 at 2425.

[601] OSPAR Commission, '*Problems and Benefits Associated with the Development of Offshore Wind Farms*' (2004) 12 http://www.ospar.org/documents/dbase/publications/p00212_Windfarms_problemsandbenefits.pdf accessed on 14 October 2013.

environment, while over 90% of the materials are recyclable.[602] Decommissioning of wind turbines for instance is relatively rapid and straightforward and ought to leave conditions above the seabed exactly as they were before the project.[603]

### 6.4.4 Natural Capital for Future Generations

Environmental sustainability requires maintenance of renewable and non-renewable energy capital for the benefit of future generations.[604] Energy reserves are seen as an environmental asset which needs to be preserved in the march towards environmental sustainability.[605] Since natural resources (inclusive of energy reserves) are part of the life support systems, and since the production and consumption of conventional energy sources exerts a lot of pressure on the environment, preserving these conventional energy sources for future generations through sustainable consumption is part of the objectives of the environmental dimension of the concept of sustainable development. As such, the greatest environmental benefit of renewable energy technologies is the preservation of natural capital for future generations. Capital here includes a healthy reserve of conventional energy sources made possible through a shift to renewable energy sources. The sustainable utilization of natural resources and the conservation of natural and human-made habitats, which are part of Europe's environmental policy, are realizable through an effective utilization of green energy technologies, which equally serve to reconcile the competing interests of the EU's energy and environmental policies.[606]

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[602] Brice Tremeac and Francis Meunier, '*Life Cycle Analysis of 4.5MW and 250W Wind Turbines*' (2009) 13 Renewable and Sustainable Energy Reviews 2104-2110 at 2107.

[603] Peter L. Fraenkel, '*Tidal Current Energy Technologies*' (2006) 148 Marine Current Turbines Ltd. Ibis 145-151 at 147 http://onlinelibrary.wiley.com/doi/10.1111/j.1474-919x.2006.00518.x/pdf accessed on 14 October 2013.

[604] Robert Goodland and Herman Daly, '*Environmental Sustainability: Universal and Non-Negotiable*' (1996) Vol. 6 No. 4 Ecological Applications 1002-1017 at 1008.

[605] Robert Goodland, '*The Concept of Environmental Sustainability*' (1995) Vol. 26 Annual Review of Ecology and Systematics 1-24 at 14.

[606] Marja Jarvela and Sirkku Juhola, (eds) '*Energy, Policy and the Environment: Modeling Sustainable Development for the North*' (Springer Science + Business Media LCC 2011) 3.

If it is true that it took a million years to produce the oil consumed in one year,[607] there is no way the natural ecosystem can keep up with the current pace of consumption without a resort to renewable energy technologies which are in abundant supply. Such green technologies should considerably lessen the pressure on conventional energy technologies, enabling the present generation to leave something behind for future generations in terms of both conventional and renewable energy sources. It must however be said that, in leaving behind a proportion of such non-renewable capital, a host of other environmental problems linked with their exploitation and production are avoided. This is in addition to the fact that the conventional energy reserves ensure a critical balance in the ecosystem. This should help preserve the earth's ecosystem and biosphere.

Resistance to conventional energy exploration and production on the ground of environmental concerns will be substantially reduced. A case in point is the growing resistance to shale gas exploration in the United Kingdom where the local population is alarmed by the threats of environmental hazards linked to shale gas exploration. [608]Another case in point is the growing opposition by Greenpeace to exploration and production activities in the Arctic Circle where potential irreversible damage to the immediate polar environment is likely.[609] A resort to renewable energy technologies will obviate the need to go to these extremes in search of energy, thereby preserving these precious resources and maintaining the earth's ecosystem in the process.

[607] S. Onuosa, '*Sustainable Development of the Petroleum Resources: The Rumpus and the Resolution*' Appearing in Z. Gao, '*Environmental Regulation of Oil and Gas*' Kluwer Law International London 1998) 441.
[608] Michel Kahn and Nina Chestney, '*RPT – Opposition, Disappointing Data wither Europe's Shale Gas Prospects*' (2015) (February, 2015) http://uk.reuters.com/article/2015/02/03/europe-shalegas-idUKL6NOVD1NE20150203 accessed on 11 April, 2015.
[609] ITV News, '*Greenpeace Activists Scale Oil Rig to Protest Drilling in Arctic Ocean*' (7, April, 2015) http://www.itv.com/news/2015-04-07/greenpeace-activists-scale-oil-rig-to-protest-drlling-in-arctic-ocean/ accessed on 12 April, 2015.

## 6.5 Focus on Some Renewable Energy Technologies

### 6.5.1 Biomass

Biomass deserves focus in this chapter because of its effect on land. Some researchers have found it difficult to understand how biomass is classified as a renewable fuel, as it was perceived as having features associated with traditional fossil fuels such as emissions and odours,[610] leading to carbon emission. Carneiro and Ferreira identified some of the environmental impacts of biomass to include emissions from additional vehicle movements used in the production process, pesticides and fertilizers used during crop cultivation, and changes in soil fertility.[611] On the other hand, some writers however believe that proper land and forest management techniques can minimize or even prevent the environmental side effects.[612]

Under the old 2003 Biofuels Directive, one of the major grounds for ineffective implementation of specified targets was the concern over the negative impact of biofuels on the environment.[613] It must however be said that the 2009 Renewables Directive has set out extensive sustainability requirements governing biomass production in its articles 17-19. One of the requirements is that biofuels must provide a 35% greenhouse gas emissions savings compared with fossil fuels, with the figure rising to 50% by 2017.[614] One issue that, however, needs to be addressed under the Directive is a reliable calculation of the length of time for which EU member states will have a carbon deficit as a result of using forest biomass for energy.[615]

Biomass renders a very useful environmental function by ensuring effective disposal through utilization of several animal and plant wastes which may otherwise have

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[610] Lorraine Whitmarsh and Paul Upham, '*Public Responses to Climate Change and Low Carbon Energy*' Appearing in Thomas Roberts et al (eds.), '*Low Carbon Energy Controversies*' (Routledge, 2013) 24.

[611] Patricia Carneiro and Paula Ferreira, '*The Economic, Environmental and Strategic Value of Biomass*' (2012) 44 Renewable Energy 17-22 at 18.

[612] R. Saez, P. Linares and J. Leal, *Assessment of the Externalities of Biomass Energy, and a Comparison of its full Costs with Coal* (1998) 14 Biomass Energy 469-78.

[613] Stavros Avionis and Lindsay C. Stringer, '*European Union Leadership in Biofuels Regulation: Europe as a Normative Power?*' (2012) 32 Journal of Cleaner Production 114-123 at 116.

[614] Christian Gamborg, Helle Tegner Anker and Peter Sandoe, '*Ethical and Legal Challenges in Bioenergy Governance: Coping with Value Disagreement and Regulatory Complexity*' (2014) 69 Energy Policy 326-333 at 329.

[615] Ibid at 330.

constituted environmental hazards. Sims, Rogner and Gregory observed that agricultural and forest residues such as bagasse, rice husks, bark and saw dusts (which also have associated disposal costs) can be utilized in the waste-to-energy conversion for heat and power generation, particularly in rural industry and communities where they are widely used.[616] In addition, they cited the case of Denmark where about 40% of electricity generated was from biomass cogeneration plants using wood waste, straw and animal wastes for biogas; and Finland where about 10% of electricity generated was from saw dust, forest residues and pulp liquors.[617] It is however unclear whether animal and plant wastes are classified as 'biomass' under the 2009 Renewables Directive. A determination of this will be important because, even though plant and animal wastes are 'wastes', the issue of carbon emission is still relevant in the utilization of the wastes for energy generation.

The Danish Government has plans to utilize up to 50% of livestock manure for green energy generation through one of the world's largest biogas plants – Maabjerg Bioenergy – which will convert 50,000 tons of $CO_2$ derivable from large amounts of manure as well as industrial waste from the food industry into energy, providing both environmental and employment benefits.[618] Panwar *et al* observed that the large amounts of animal manure and slurrie produced today by the animal breeding sector as well as the wet organic waste streams represent a constant pollution risk with a potential negative impact on the environment if not optimally managed.[619] Such optimal management is achieved through utilization by biomass technologies. Also, municipal solid wastes, liquid by-products from the pulp and paper production industry and food processing wastes can all be used for conversion into biomass energy.[620]

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[616] Ralph E.H. Sims, Hans-Holger Rogner and Ken Gregory, '*Carbon Emission and Mitigation Cost Comparisons between Fossil Fuel, Nuclear and Renewable Energy Sources for Electricity Generation*' (2003) 31 Energy Policy 1315-1326 at 1318.

[617] Ibid.

[618] Maabjerg Bioenergy, '*About Maabjerg Bioenergy*' (July 07, 2014) http://international.maabjerg-bioenergy.dk/about-maabjerg-bioenergy/ accessed on 15 April, 2015.

[619] N.L. Panwar, S.C. Kaushik and Surendra Kothari, '*Role of Renewable Energy Sources in Environmental Protection: A Review*' (2011) 15 Renewable and Sustainable Energy Reviews 1513-1524 at 1517.

[620] Athanasios Angelis-Dimakis et al, '*Methods and Tools to Evaluate the Availability of Renewable Energy Sources*' (2011) 15 Renewable and Sustainable Energy Reviews 1182-1200 at 1192.

Knopf *et al* observed that large scale energy crop production will increase the competition for land, water and other inputs, and may create conflicts with other sustainability aspects such as food security, land-use emissions, deforestation, water use and biodiversity loss.[621] In fact, Flavin and Dunn observed that future use of biomass would be constrained by water and land limitations among other factors.[622] The issue of land intensification associated with biomass can be avoided as non-food crop land can be utilized for production of the raw materials through appropriate laws that can be enacted. Hall and Scrace observed that, within the EU (especially in Eastern Europe), there is enough arable or grassland that could be utilized for biogas raw materials production without encroaching on farmlands.[623]

On the issue of carbon emission during the production process raised by Whitmarsh and Upham,[624] Moody-Stuart is of the view that when the raw materials are converted into energy, trees planted to replace them will re-absorb the carbon dioxide liberated during combustion, as there are trees which may grow from eight and up to eleven metres in a year.[625]

Through better management, backed by appropriate legislation, especially the relevant sections of the 2009 Renewables Directive, utilization of biomass technologies has environmental benefits which include mitigation of soil erosion, water pollution, reduced pressure on landfills and the provision of a much improved forest cover for wild life habitat.[626] Energy crops (as opposed to food crops) offer a lot of benefits to mankind when utilized for biomass. Rowe *et al* observed that increases in soil organic matter in relation to the cultivation of some energy crops such as short rotation coppice and miscanthus plantation can be linked to wider improvements in soil condition including

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[621] Brigitte Knopf *et al*, '*Managing the Low-Carbon Transition – From Model Results to Policies*' (2010) Vol. 31 The Energy Journal (Special Issue 1) 223 at 238.
[622] Christopher Flavin and Seth Dunn, '*Renewable Energy Technologies and Policies: Status and Prospects*' (1997-98) 5 Buff. Envtl. L.J. 1 at 4.
[623] D.O. Hall and J.I. Scrace, '*Will Biomass be the Environmentally Friendly Fuel of the Future?*' (1998) Vol. 15 Nos 4/5 Biomass and Bioenergy 357-358.
[624] Whitmarsh and Upham (n. 610).
[625] Mark Moody-Stuart (n. 570) at 21.
[626] Ayhan Demirbas, '*Potential Applications of Renewable Energy Sources, Biomass Combustion Problems in Boiler Power Systems and Combustion Related Environmental Issues*' (2005) 31 Progress in Energy and Combustion Science 171-192.

improved soil texture, water retention and fertility as a result of reduced tillage.[627] In concluding the discussion on biomass, the observation of Bassam is important as it provides a succinct view of the environmental benefits of biofuels utilizing energy crops, which are perfect substitutes for monoculture food crops:

> Wide utilization of plant raw materials for energy offers the chance to reorganize agricultural production towards an environmentally consistent system through increasing the number of plant species, reintroducing traditional crops and introducing new alternative crops. This will lead to the production of different energy feedstocks with greater outputs and lower environmental inputs. It will also lead to diversification, improving the appearance of the landscape, reducing the inputs such, as fertilizers, herbicides, fungicides, fuels, etc., in crop management, and improving the microclimate through water use and recycling mechanisms… Crops can absorb $CO_2$ released from the combustion of biofuels and produce oxygen from water during photosynthesis, thus reducing the depletion of oxygen in the atmosphere.[628]

### 6.5.2 Hydroelectric Power

Hydroelectric power sources also deserve special mention because of their long history (which predates the modern energy crisis) and the claim that they have a negative environmental impact covering a wide area of land. Ottinger and Williams observed that, though hydroelectricity is the largest renewable resource in use today, its large dams flood extensive tracts of land, creating environmental problems and displacing people

[627] Rebecca L. Rowe, Nathaniel R. Street and Gail Taylor, '*Identifying Potential Environmental Impacts of Large-Scale Deployment of Dedicated Bioenergy Crops in the UK*' (2009) 13 Renewable and Sustainable Energy Reviews 271-290 at 277.

[628] Nasir L. Bassam, '*Energy Plant Species: Their Use and Impact on Environment and Development*' (James & James Science Publishers Ltd., 1998) 43.

and agriculture in the process.[629] They also observed that the dammed water creates some carbon dioxide and methane (a greenhouse gas) emissions from decaying vegetation trapped within.[630]

They however suggested a way out, stating that by adding power to existing dams, these problems are avoided, and as such placing generating equipment at existing dams has great worldwide potential with no environmental consequences. They further observed that run-of-the-river hydroelectric systems are technologically more complex but result in minimal environmental consequences. Furthermore, they stated that small dams can reduce the perceived environmental harms of hydroelectric power production.[631]

In Scotland, an application for consent to construct a hydroelectric project at Shieldaig and Stattadale was refused under the Electricity Act of 1989 on environmental grounds even though it was seen as a major means for achieving EU green targets.[632] The dams constructed to create reservoirs are said to have bio-physical effects on the environment such as loss of land and habitat, alteration of hydrological regime and aquatic ecology, disruption of riverine fishes and reservoir sedimentation with consequent backwater effects.[633] In measuring the impact of the hydroelectric power project in the Shieldaig case, three pieces of EU legislation – the Habitats and Species Directive (Directive Council Directive 92/43//EEC), the Birds Directive (Directive 2009/147/EC) and the Water Framework Directive (Directive 2000/60/EC) – were applied. The Habitats Directive was applied because it was felt the project would disrupt the freshwater pearl mussel population within the area while the Water Framework Directive was applied due to concerns concerning changes in the chemical composition of the water and its morphology as it passed downstream.

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[629] Richard L. Ottinger and Rebecca Williams, '*Renewable Energy Sources for Development*' (2002) 32 Envtl. L. 331 at 338-339.
[630] Ibid.
[631] Ibid.
[632] Scottish Executive Online, Business and Industry http://www.scotland.gov.uk/about/ELLD/EN-CS/00017058/page1670198256.aspx accessed on 14 October 2013.
[633] Barry Sadler, Iara Verocai and Frank Vanclay, '*Environmental and Social Impact Assessment for Large Dams*' (2000) *Vol. 2* World Commission on Dams Thematic Review. Institutional Processes (World Commission on Dams) 11.

This particular case showed an obvious and critical clash between EU legislation on renewable energy targets and those on environmental protection and represents a dilemma at first sight. However, Pillai, Reid and Black have observed that if climate change targets are not met because projects such as the hydroelectric project are not approved due to environmental concerns, then the habitat that is being sought to be protected would soon be damaged by climate change.[634] This is from the effect of fossil fuel combustion and consumption. They however suggested that, while EU Directives create concrete and site-specific duties which governments must honour, renewable energy targets are general and suitable alternative hydroelectric sites may be found elsewhere.

In addition, they observed that, while concerns had been raised about fish and other aquatic species being prevented from migrating up or down the river by the physical construction of the dam, many hydroelectric schemes now have fish passes or fish ladders designed to enable fish navigate the dam.[635] The fact that fish population actually benefits from the hydroelectric project was affirmed by Moran who observed that the flooding that follows release of trapped water enables the fish to move into the flood plain to feed and reproduce, leading to an increase in their population.[636] Furthermore, in the process of flooding, nearby local farmers benefit from boosted groundwater supplies needed for plant growth.[637]

Article 4 of the Water Framework Directive requires a sustainable long term management of water, preventing it from deteriorating. The concerns raised under the Directive appear to have been challenged by Yuksal who observed that hydropower does not consume or pollute the water it used to generate power, leaving this vital

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[634] Aylwin Pillai, Collin T. Reid and Andrew R. Black, '*Reconciling Renewable Energy and the Local Impacts of Hydro-Electric Development*' (2005) 7(2) Environmental Law Review 110-123.

[635] Ibid.

[636] Thomas Moran, '*The Environmental and Socio-Economic Impacts of Hydroelectric Dams in Turkish Kurdistan*' (2004) Unpublished Thesis, Roskilde University http://rudar.ruc.dk/handle/1800/403 accessed on 14 October 2013.

[637] Misty Herrin, '*The Nature Conservancy, China: Minimizing Dam Impact on the Yangtze River*' (2009) http://www.nature.org/wherewework/asiapacific/china/features/yangtzedams.html accessed on 14 October 2013

resource available for other uses.[638] In any case, the Directive on Environmental Impact Assessment mandates that the environmental impact of projects such as hydroelectric power projects should be identified and addressed before the project is executed.

### 6.5.3 Wind Farms

One major environmental issue associated with wind farms is the noise generated by wind turbines. Pilot studies conducted by physicians in some countries including the United Kingdom found out that families are suffering from various degrees of negative health and sleep issues linked to noise from wind turbines.[639] To solve this problem, it has been suggested that well designed wind farms should be located so that increases in ambient noise levels around noise-sensitive developments are kept to acceptable levels with relation to existing background noise, and this will normally be achieved through good design of the turbine and through allowing sufficient distance between the turbines and any existing noise-sensitive development so that noise from the turbines will not normally be significant.[640]

There are also speculations that vibrations from the rotation of wind turbines have a negative impact on seismic monitoring stations. This may be particularly more serious where there are other wind farms with a cumulative effect on such stations. At the Fourth International Meeting on Wind Turbine Noise held in Rome in April 2011, the United Kingdom seismic monitoring site at Eskadelmuir, Scotland, was a case study. The United Kingdom has a duty under the Nuclear-Test Ban Treaty to ensure the detection capacity of the station at all times, and vibrations from wind farms were

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[638] Ibrahim Yuksal, '*Hydropower for Sustainable Water and Energy Development*' (2010) 14 Renewable and Sustainable Energy Reviews 462-469.

[639] Barbara J. Frey and Peter J. Hadden, '*Noise Radiation from Wind Turbines Installed Near Homes: Effects on Health*' (2012) http://www.senedd.cynulliadcymru.org/documents/s6429/2012.03.08%20Stephen%20Dube%20-%20summary%20of%20Frey%20Haddon%20Report accessed on 14 October 2013.

[640] Draft PPS18: Renewable Energy Annex 1 Wind Energy Planning Issues: Noise <http://www.planningni.org.uk/index/policy/policy_publications/planning_statements/pps18/pps18_annex1/pps18_annex1_wind/pps18> accessed on 14 October 2013.

thought to compromise its capabilities.[641] The problem was traced to turbine designs, and the solution was found in a technology – the Tuned Mass Damping System (TMDS) - which could be retrofitted or installed at the time of construction to significantly reduce vibrations from the turbines.[642]

Earlier, research conducted by the University of Salford on noise from wind turbines found out that most of the wind farms for which data were available were not considered to be causing a statutory nuisance (as specified under the Environmental Protection Act, 1990), suggesting that the issue was not as serious as previously thought.[643] Furthermore, it was found out that most of the complaints arising from noise from the turbines had subsided due to the introduction of a turbine control system (similar to the TMDS).[644] In fact, in the case of Fagerskiold v. Sweden[645], the applicants complained to the European Court of Human Rights on the ground that the wind turbines erected close to their home emitted continuous noise which interfered with the peaceful enjoyment of their property. The court held that the nuisance associated with the wind turbines was not enough to constitute a case of severe environmental pollution.

Wind farms have also been criticized for their perceived negative impact on birds through disturbance displacement which affects them either by loss of nesting, foraging, roosting, productivity, or even survival.[646] Bearing in mind the EU Habitat and Birds Directives and the need to preserve and protect nature, a helpful way out has been developed in Scotland where a Bird Sensitivity Map has been developed to aid in the

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[641] Styles P. *et al*, '*Monitoring and Mitigation of Low Frequency Noise from Wind Turbines to Protect Comprehensive Test Ban Seismic Monitoring Stations*' (2011) http://www.xiengineering.com/news_articles/wind_turbine_noise_2011.pdf accessed on 14 October 2013.

[642] Ibid 6.

[643] Department for Business Enterprise and Regulatory Reform, '*Research into Aerodynamic Modulation of Wind Turbine Noise: Final Report*' (2007). Report by the University of Salford http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk//files/file40570.pdf accessed on 14 October 2013.

[644] Ibid.

[645] (2008) ECHR 37664/04. (25 March, 2008)

[646] Catherine Bowyer *et al.*, '*Positive Planning for Onshore Wind – Expanding Onshore Wind Energy Capacity while Conserving Nature*' (2009). A Report by the Institute for European Environmental Policy http://www.rspb.org.uk/Images/Positive%20Planning%20for%20Onshore%20Wind_tcm9-213280.pdf accessed on 14 October 2013.

location of wind farms, based on a distributional data for a suite of sensitive bird species.[647]

Offshore wind farms have the potential of reducing some of the perceived landscaping and visual impact issues associated with onshore wind farms, although the EU Habitats and Birds Directives equally apply offshore. So far, there are no serious environmental issues associated with offshore wind farms, although more environmental impact studies are needed.[648] In fact, Musial *et al* have argued that some of the public concerns about the negative environmental impacts of wind turbines on marine life have been heightened by poorly researched media anecdotes rather than documented factual information.[649] The OSPAR Convention guidelines on the decommissioning of offshore renewable energy installations are however relevant.

### 6.5.4 Tidal Energy

One distinguishing feature of this green energy source is its high level of predictability. Its potential for environmental development is also worthy of mention. In the first place, tidal barrages, erected for energy generation can equally double as artificial reefs by potentially reducing erosion of the shoreline,[650] a growing environmental challenge as sea levels rise due to global warming. There are concerns that such artificial barriers may be harmful to the ecosystem of the marine area. It is claimed that the construction of a barrage on or near a nursery or spawning area may adversely affect the population levels of marine mammals through lack of access to feeding, spawning and nursery grounds.[651] However, it has been said that the construction of large scale offshore

[647] J.A. Bright *et al.*, '*Bird Sensitivity Map to provide Locational Guidance for Onshore Wind Farms in Scotland*' (2006). A Report by the Society for the Protection of Birds http://www.rspb.org.uk/images/sensitivitymapreport_tcm9-157990.pdf accessed on 14 October 2013.
[648] Robin Pelc and Rod M. Fujita, '*Renewable Energy from the Ocean*' (2002) 26 Marine Policy 471-479 at 478.
[649] Walt Musial, Sandy Butterfield and Bonnie Ram, '*Energy from Offshore Wind*' (2006) Offshore Technology Conference Paper NREL/CP-500-39450 http://www.nrel.gov/docs/fy060sti/39450.pdf accessed on 14 October, 2013.
[650] Ronald Shaw, '*Wave Energy: A Design Challenge*' (New York: Halstead Press, 1982).
[651] Chris Frid *et al*, '*The Environmental Interactions of Tidal and Wave Energy Generation Devices*' (2012) 32 Environmental Impact Assessment Review 133-139 at 136.

devices results in new areas of sheltered water attractive for fish, sea birds, seals and sea weed, and present no difficulty to migrating fish.[652]

The problem here arises when the time for decommissioning comes. The OSPAR Convention Guidelines on Artificial Reefs adopted in 1999 disallows disused offshore installations from being converted into artificial reef.[653] Observing this regulation creates the risk of possible disruption to marine life created by such artificial reefs. There have been calls for OSPAR to rethink its decision in this respect because such offshore structures in some instances have been shown to provide habitat for some threatened cold water coral.[654] These calls appear to have been heeded in the 2012 Guidelines.[655]

These environmental concerns may have been dispelled due to improvements in the technology. For instance, tidal turbines are now designed to allow the passage of water, fish and sediments through the channel,[656] making them the most environmentally benign tidal option. Energy extraction from marine current turbines promises to be an environmentally friendly way to generate renewable electric energy with no emission of greenhouse gases during normal operation.[657] In fact, it has been observed that marine renewable energy infrastructure (including tidal and offshore wind turbines) increase the amount of hard substrate in the immediate coastal environment, thus having a positive environmental impact.[658] This is because this hard substrate has the capability to enhance fisheries through the creation of new habitat capable of supporting fish population and has consistently been demonstrated to increase both the density and

[652] Fujita Research: Promoting Innovative Construction Technologies, '*Wave and Tidal Power*' http://www.fujitareasearch.com/reports/tidalpower.html accessed on 14 October 2013.
[653] Agreement 1999-13. http://www.ospar.org/v_meetings/browse.asp> accessed on 12 April, 2015.
[654] Dolly Jorgensen, '*OSPAR'S Exclusion of Rigs-to-Reef in the North Sea*' (2012) 58 Ocean and Coast Management 57-61.
[655] OSPAR Guidelines on Artificial Reefs in Relation to Living Marine Resources (Agreement 2012-03). It replaces the 1999 Guidelines.
[656] Osborne P., '*Electricity from the Sea*' (Fujita Search Report, 1998).
[657] Marten Grabbe *et al.*, '*A Review of the Tidal Current Energy Resource in Norway*' (2009) 13 Renewable and Sustainable Energy Reviews 1898-1909 at 1899.
[658] Richard Inger *et al.*, '*Marine Renewable Energy: Potential Benefits to Biodiversity? An Urgent Call for Research*' (2009) 46 Journal of Applied Ecology 1145-1153 at 1148.

biomass of fish when compared with surrounding soft bottom areas and even local natural reefs.[659]

## 6.6 Conclusion

The evolving legal framework for the development of renewables has the potential to ensure environmental development within the EU. A comparative analysis of the environmental impact of conventional and renewable energy sources carried out in this chapter reveals that renewable energy technologies have considerably lesser environmental impacts and are therefore net minimal contributors to environmental development. For instance, based on this comparative analysis, Bilen *et al* observed that the external cost of coal power plants for instance was typically 3-4 cents per kWh, while the external cost of renewable energy was put at 0.1-2.5 cents per kWh.[660]

Renewable energy technologies have minimal (manageable) levels of emission which can be conveniently reabsorbed within the ecosystem. They have the benefit of being environmentally benign when developed in a sensitive and appropriate way.[661] The positive environmental impact of these technologies has spurred countries like the United Kingdom to establish the Environmental Transformation Fund, a financial commitment by the United Kingdom to accelerate the commercialization of sustainable energy technologies ( and energy efficiency technologies as well).[662] Akella *et al* listed these environmental benefits to include reduced air pollution (which is distinct from carbon emission), lower impact on watersheds, reduced transportation of energy resource and maintenance of natural resources for the long term.[663] Furthermore, the law plays a huge role through the planning process where some environmental

[659] Ibid.
[660] Kadir Bilen *et al*., '*Energy Production, Consumption and Environmental Pollution for Sustainable Development: A Case Study in Turkey*' (2008) 12 Renewable and Sustainable Energy Reviews 1529-1561 at 1541.
[661] Abdeen Mustafa Omer (n.589).
[662] Department for Business Enterprise and Regulatory Reform, '*UK Environmental Transformation Fund: Strategy*' http://www.ukccsrc.ac.uk/system.files/08827.pdf accessed on 15 October 2013.
[663] Ashok K. Akella, R.P. Saini and M.P. Sharma, '*Social, Economic and Environmental Impacts of Renewable Energy* Systems' (2009) 34 Renewable Energy 390-396 at 391.

externalities associated with green technologies such as noise pollution, bird collisions and shadow casting, are usually assessed at the permit stage of the individual project, with strict EU environmental legislation avoiding significant negative impacts for the environment.[664]

A comparative analysis carried out in this chapter favours renewable energy technologies over and above fossil fuel technologies in the quest towards environmental development. Krewitt and Joachim provide an apt affirmation of this fact when, in analyzing the German Renewable Energy Sources Act, they concluded that, based on current understanding of environmental externalities, the environmental benefits due to electricity generation from renewable energy sources outweigh the extra costs resulting from fiscal support for such technologies under the Act. They further stated that the support for renewable energy sources can be justified just on the basis of avoided environmental impacts and the related economic benefits.[665] The support for these technologies comes from government in the form of policies.

While research and development is ongoing to further improve on these technologies to eliminate or at least reduce some of the environmental externalities associated with them, it can be said that the main challenges facing them are not these desired technical improvements but political and institutional challenges which are still biased toward conventional energy sources. In fact, green energy technologies have been shown to be a major way by which countries can meet international environmental obligations.[666] Therefore, to surmount the political and institutional challenges, the law has a major role to play by ensuring continued progress in environmental development through renewable energy technologies, including research. Planning and EIA laws ensure that environmental issues are taken into consideration at the beginning of every project. This is important as most environmental laws are focused on the latter stages of

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[664] Jochen Hierl and Peter Palinkas, '*Energy Technology Policy in Europe*' Appearing in P.J.J. Welfens and J.T. Addison (eds), *Innovation, Employment and Growth Policy Issues in the EU and the US* (Springer-Verlag Berlin Heidelberg, 2009) 290.

[665] Wolfram Krewitt and Joachim Nitsch, '*The German Renewable Energy Sources Act – An Investment into the Future Pays off Already Today*' (2003) 28 Renewable Energy 533-542 at 540.

[666] R.A Zakhidov, '*Central Asian Countries Energy System and Role of Renewable Energy Sources*' (2008) 44(3) Applied Solar Energy 218-223.

the energy project i.e the processing and consumption stages. The LCA technique focuses on the whole process from the early stages to the later stages. The EIA laws within the EU can be made to incorporate this technique to enable all environmental concerns to be addressed at all stages.

At the end of the useful life of every renewable energy infrastructure, there is a need for comprehensive decommissioning laws governing their effective disposal. This is because most of the existing laws are focused on offshore energy infrastructure, while most renewable energy facilities are on land. It remains to be seen however whether planning laws or EIA laws can adequately take care of this aspect of development of these technologies. This is because most of the existing laws on decommissioning are focused on offshore conventional energy sources.

# CHAPTER SEVEN

# LEGAL FRAMEWORK FOR SOCIAL ACCEPTANCE OF RENEWABLE ENERGY TECHNOLOGIES IN THE EU

## 7.1 Introduction

Chapter seven examines the legal framework which enables renewable energy technologies to become acceptable means of energy generation and production within the EU. It will be shown that this form of social acceptance creates a symbiotic relationship between these technologies and the society, leading to social cohesion, a form of social development. Social development is the third leg on which the concept of sustainable development stands. It concludes the discussion started in Chapter Five. Elghali *et al* stated that sustainable energy technologies should meet the three pillars of sustainability which they classified as economic viability, ecological performance and social acceptance,[667] (i.e the three pillars of sustainable development). There will be an examination of how the law has aided the evolution of these technologies through a socio-technical process. This socio-technical process involves the symbiotic relationship between society and these technologies. This process should give society a say and enables the technologies to evolve in ways best suited to the needs of the people, ensuring social development. This involvement should also ensure the protection of the fundamental rights of the people and the survival of the society, issues that will also be examined.

Social cohesion here, provided for under the 2009 Renewables Directive (Directive 2009/28/EC), can be described in part as the process of ensuring the continued survival of present and future generations through the rational production and consumption of energy resources. It comes with the rational production and consumption of energy that

[667] Lucia Elghali *et al*, '*Developing a Sustainability Framework for the Assessment of Bioenergy Systems*' (2007) 35 Energy Policy 6075-6083.

ensures a higher quality of life for society as well as its continued survival. Some writers are even of the view that the end goal of sustainable development is social.[668] In other words, sustainability, which is that end goal, is the same as social development for present and future generations.

Rio and Burguillo's distinction between substantive sustainability and procedural sustainability is worthy of a referral at this point. The former refers to the impact of renewable energy technologies on the three dimensions of sustainable development (the economic, environmental and social dimensions) while the latter calls for a wider social participation process involving the local population.[669] It will be examined in this chapter how legal tools combine with procedural sustainability to aid renewable energy technologies in their contribution to social development in part through the involvement of the public in the development of these technologies, building social cohesion in the process.

At the end of the chapter, it will be shown that social cohesion comes with benefits such as the modification of societal behavior, rural development and urban regeneration – issues which will be examined in detail in this chapter. These benefits eventually ensure the continued survival of society – an essential benefit of social development.

## 7.2 A Secured Future and a Rights-based Approach

If it is agreed that the present generation owes obligations to future generations under the theory of obligations, then it may be suggested that fundamental rights are created, including the right to reasonable levels of reserves of natural capital for human development. It is assumed that the survival of present day society and future generations depends on the alternative sources of energy such as renewable energy technologies. In order to avoid the catastrophic energy crisis faced by the medieval

[668] Subhas K. Sikdar, *Sustainable Development and Sustainability Metrics* (2003) Vol. 49 No. 8 AIChE Journal.
[669] Pablo Del Rio and Mercedes Burguillo, *An Empirical Analysis of the Impact of Renewable Energy Deployment on Local Sustainability* (2009) 13 Renewable and Sustainable Energy Reviews 1314-1325.

agrarian society of the 14th century which led to the collapse of that society,[670] then the EU may need to invest in these technologies. Reliance is placed on the seminal anthropological study by Diamond to provide support for the fact that failure by the EU to act now on renewable energy technologies is a grave threat to the survival of member states.[671] Diamond examined factors that can lead to the collapse of a society and those that can lead to its survival, and it is assumed here that the continued reliance by the EU on external sources for energy supplies threatens the fabric of the member states. This chapter therefore adopts Blacks' definition of social sustainability which is as follows:[672]

> Social Sustainability is the continuation of society in the future, implying the continuation of its social values, social identities, social relationships and social institutions (emphasis mine)

Present and future generations may therefore be said to have an entitlement to their preservation and that of their society. This introduces the element of rights to energy sources for development. The Charter of Fundamental Rights of the EU, in its article 6, provides that:

> The Union recognizes and respects access to services of general economic interest as provided for in national laws and practices, in accordance with the Treaty establishing the European Community in order to promote the social and territorial cohesion of the Union.

This charter provides that the Union "recognizes and respects" the right of the people to services of general economic interest, which also includes the right of access to energy. But access to energy is provided mostly by private undertakings which have profit motives. The conventional energy supply model does not therefore guarantee fundamental rights to energy supplies. As such, it may be difficult for the EU to enforce

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[670] Holger Schlor *et al*., '*The Meaning of Energy Systems for the Genesis of the Concept of Sustainable Development*' (2012) 97 Applied Energy 192.

[671] Jared Diamond, '*Collapse: How Societies Choose to Fail or Succeed*' (Penguin Books, 2005).

[672] Alan W. Black, '*The Quest for Sustainable Healthy Communities*' in Effective Sustainability Education: What Works? Why? Where Net? (Linking Research and Practice, 2004).

these terms of the charter to guarantee access to energy for the people as of right.[673] Aviles' suggestion that, in line with the 1988 Cour d'Appel de Bruxelles decision, public authorities have the positive duty to provide gas and electric service within the framework of social welfare services may be unrealistic. This makes distributed energy generation all the more important and laws on them need to be strengthened to encourage more participation by private citizens. In other words, a distributed energy supply model built on renewables may offer a better guarantee of right of access to energy sources. This is because distributed generation favours a decentralization of ownership of energy generation infrastructure.

In any case, Article 194(1)(c) of the Treaty on the Functioning of the European Union provides that part of the EU energy policy shall be the promotion of new and renewable forms of energy. It may be stated that, borrowing from the ruling of the European Court of Justice in the case of 22nd May, 1985,[674] the EU has an obligation to develop these forms of energy, translating into enforceable rights vested in the people.

The fundamental right to an environment capable of supporting human society and the full enjoyment of human rights is recognized in the constitutions of more than 100 states and directly or indirectly in several international instruments.[675] This raises the issue of equitable access to energy resources and social equity. Furthermore, even though there are no express rights to energy in existing laws, the Universal Declaration of Human Rights (which has now acquired the force of international law) provides in its Article 5(1) that everyone has a right to a standard of living adequate for the health and well-being of himself and his family. This right cannot exist without access to secure and resilient

[673] Luis A. Aviles, '*Electric Energy Access in European Union Law: A Human Right?*' The Columbia Journal of European Law Online http://www.academia.edu/3516320/ELECTRIC_ENERGY-ACCESS_IN_EUROPEAN_UNION_LAW-A_HUMAN_RIGHT accessed on 25 May 2015.

[674] Case 13/83. Parliament v. Council (On the failure of the Council to put procedures in place in the area of transportation within the EU).

[675] Robin Mearns and Andrew Norton (eds.), *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World* (The World Bank, 2010) 11-12.

energy sources. There is therefore a link between access to energy and the socio-economic goals included in the Universal Declaration of Human Rights.[676]

Principle 1 of the Rio Declaration proclaims that human beings are the centre of concern for sustainable development and that they are entitled to a healthy and productive life in harmony with nature. Absence of energy has a grave impact on the fundamental rights available to humanity, including the rights to life and self-determination. A rights-based approach is therefore worthy of discussion. This approach informed the decision in *Oposa v, Factoran* where it was alleged that the present and continued logging violated the rights of present and future generations to a healthy environment guaranteed under the constitution of the Philippines. Leaving adequate levels of natural resources behind for present and future generations raises the issues of equity and social justice. Society has a need for these resources for sustenance and development.

A rights-based approach engenders social equity. Social equity is one of the principal values underlying sustainable development, as it encapsulates the degree of fairness and inclusiveness with which energy resources are distributed and energy systems are made accessible with pricing schemes formulated to ensure availability and affordability.[677] Preservation of energy reserves/sources for the benefit of present and future generations encapsulates the principle of social justice/equity, and renewable energy technologies may be the means of ensuring equity in energy preservation and consumption. These technologies put into practice the ideologies of the theory of justice as more sustainable sources of energy are made available to humanity while environmental protection is ensured through the sustainable preservation of remaining conventional energy reserves.

While seeking to reiterate the rights of present and future generations to development, renewable energy technologies may be an avenue for ensuring this form of development. EU member states are required to invest in them through laws such as

[676] Marc Clemson, '*Human Rights to the Environment: Access to Energy*' (2012) 16 N.Z. J. Envtl. L. 39., examining Bradbrook and Gardam (2006).
[677] Ivan Vera and Lucille Langlois, *Energy Indicators for Sustainable Development* (2007) 32 Energy 875-882 at 878.

the 2009 Renewables Directive, and by doing so, they avoid causing harm to both generations. The harm here is the inability of future generations to have access to energy resources for development. Justice herein is synonymous with having alternative sources of energy for development. Past efforts on energy conservation for future generations were based on individualistic approaches which assumed that individuals would be able to make objective decisions in the interest of all.[678] Such individualistic efforts may be fruitless without renewable energy technologies developed within the framework of the EU, which enforces the needed individual behavioral change.[679] Furthermore, within an EU legal framework, these technologies have the capacity to shape the consumption patterns of society as they become more popular and in the process engender sustainability.[680]

## 7.3 Resilient Energy System

Preserving energy for present and future generations requires a resilient energy system which is not susceptible to challenges that can lead to societal collapse. While conventional energy sources face an increasingly alarming challenge of depletion, low carbon renewable technologies rely on an abundant natural resource base with the risk of societal collapse appearing very low. O'Brien and Hope observed that the starting point for building resilience in energy supplies is through technologies that allow for maximum resource capture.[681] They said this will necessitate a shift from the concentrated ownership of production and distribution capacity of conventional energy systems to a more democratic model with many stakeholders which low carbon renewable technologies offer.[682]

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[678] Tim Jackson, '*Negotiating Sustainable Consumption: A Review of the Consumption Debate and its Policy Implications*' (2004) 15(6) Energy and Environment 1027-1051.
[679] Eva Heiskanen *et al*., '*Low-Carbon Communities as a Context for Individual Behavioural Change*' (2010) 38 Energy Policy 7586-7595.
[680] Kirsten Gram-Hanssen, '*Consuming Technologies – Developing Routines* ' (2008) 16(11) Journal of Cleaner Production 1181-1189.
[681] Geoff O'Brien and Alex Hope, '*Localism and Energy: Negotiating Approaches to Embedding Resilience in Energy Systems*' (2010) 38 Energy Policy 7550-7558 at 7552.
[682] Ibid.

In line with this observation, Carvalho *et al* envisaged a 'social vision' for Europe in which smart grids can lead to a democratization of energy through changes in ownership of production and network capacities, allowing each building to generate and store green energy for its needs and sell the excess through the smart network.[683] In what appears to be an affirmation of the above, Taylor observed that, for renewables to benefit present and future generations, there must be widespread acceptance that the gains will be incremental and favour local autonomy, which necessitates patience and appreciation of small gains and willingness to participate in consensus building.[684]

Distributed generation encourages participation in the energy generation process. It is the generation of energy on a small scale at a site close to customers and tied to an electric distribution system.[685] EU member states have utilized the various Feed-in-tariff laws and other legal instruments specifying financial incentives to encourage distributed generation.[686] Ropenus *et al* have however observed that the EU has no coherent policy framework on distributed generation as the definition of distributed generation covers several technologies, including renewables.[687] There may therefore be a need for dedicated laws on distributed generation for renewable energy technologies to enhance their development.

A step towards creating a resilient energy system in the EU is through the EU Energy Union project (looked at under Chapter Four, paragraph 4.10), which is designed to use the power of cross-border collaboration to address new energy challenges.[688] It has a major potential to reduce the costs and risks of the European Union Energy

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[683] Maria da Graca Carvalho, Matteo Bonifacio and Pierre Dechamps, '*Building a Low Carbon* Society' (2011) 36 Energy 1842-1847 at 1845.

[684] Jennifer Taylor, '*Ethics of Renewable Energy*' (2008) Submitted to the World Wind Energy Conference http://www.ontario-sea.org/Storage/27/1872_Community_Power_Bringin-Ethics_Back_into_Energy_Politics.pdf accessed on 28 November, 2013 at p.13.

[685] EPCOR, '*Distributed Generation*' <epcor.com/efficiency-conservation/Documents/Distributed-Generation-Edmonton.pdf. accessed on 25 November, 2015.

[686] Johann A. Hernandez, Francisco Santamaria and Cesar L. Trujillo, '*Impact of Regulation in the Development of Distributed Generation*' (2015) Vol. 28 Issue 1, The Electricity Journal 83-95 at pg. 86.

[687] Stephanie Ropenus, Henrik Klinge Jacobsen and Sascha Thorsten Schroder, '*Network Regulation and Support Schemes – How Policy Interactions Affect the Integration of Distributed Generation*' (2011) 36 Renewable Energy 1949-1956.

[688] Jonathan Gaventa *et al*., '*EU Energy Union Assessment 2015 –Towards a Resilient Energy Union with a Forward-Looking Climate Policy*' Briefing Paper November 2015.

Transition.[689] In 2016, legislative proposals will be tabled to, among others, ensure updates in the internal energy market package and the 2009 Renewables Directive.[690]

## 7.4 Social Acceptance

National governments in Europe have a duty to provide the basic necessities of life to the electorate, and energy is central to improving the quality of life. In doing this, it is suggested that renewable energy technologies should be viewed, not as mere technologies, but as part of a socio-technical process which relies on social acceptance or communitarianism. For instance, Walker and Cass view renewable energy technologies not simply as a series of engineering artifacts performing energy functions, but as configurations of the social and technical which have emerged contingently in particular contexts, and which mirror wider social, economic and technical relations and processes.[691] Social acceptance requires the involvement of all stakeholders in the evolutionary or developmental process of these technologies. Assefa and Frostell appeared to agree with this when they stated that the third pillar of the concept of sustainable development (i.e social development - of which social acceptance is a subset) should be synonymous with social acceptance of these technologies,[692] in line with the fundamental rights of the society to choose the particular renewable energy source best suited to its needs. Social acceptance of renewable energy technologies follows a process of stakeholder analysis which scrutinizes the impact of the projects on local social cohesion, the quantity and quality of human relations in the area, the forming or engagement in associations or the future prospects of the population.[693]

It can therefore be said that social acceptance is the culmination of the fundamental rights of the society to review, assess and examine these technologies. Social

[689] Ibid.
[690] Ibid.
[691] Gordon Walker and Noel Cass, '*Carbon Reduction "the Public" and Renewable Energy: Engaging with Socio-Technical Configurations*' (2007) 39.4 Area 458-469 at 459.
[692] G. Assefa and B. Frostell, '*Social Sustainability and Social Acceptance in Technology Assessment: A Case Study of Energy Technologies*' (2007) 29 Technology in Society 63-78.
[693] Pablo Del Rio and Mercedes Burguillo (n. 669) at 1320.

acceptance brings social cohesion, a fact captured in page 1 of the 2009 Renewables Directive, where it is provided that these technologies contribute to sustainable development by creating local employment and by having a positive impact on social cohesion. Social acceptance also creates a socio-technical system which is not one-sided but rather involves a mutual relationship between society and these renewable energy technologies. This mutual relationship could ensure the continued survival of society, leading to social development.

Brown and Corbera view equity as a right of inclusion in the process of decision-making for development.[694] This is in line with social acceptance. Renewable energy technologies ensure that members of the public have certain fundamental rights to choose the particular energy source. For instance, they may counterbalance any responsibilities they are prepared to shoulder by insisting on certain rights such as the right to have their say or even generate their own energy, and the right to consider how equitable or otherwise a particular renewable energy source may be.[695]

The various planning laws at the national levels and the EIA Directive at the EU level ensure the participation of stakeholders in the decision-making process for the siting and development of these technologies. The EU EIA Directive (85/337/EC) makes environmental impact assessment a requirement for activities listed in its annexes. Its annex 2 covers the energy industry, including energy sourced from renewables like wind and hydroelectric energy production. A 2003 amendment to the directive was carried out through directive 2003/35/EC. This latter directive makes provisions for public participation in respect of the drawing up of plans and programmes for such projects which have an impact on the environment. These avenues may well ensure social acceptance of these technologies, leading to social cohesion as provided for under the 2009 Renewables Directive.

[694] Katrina Brown and Esteve Corbera, '*Exploring Equity and Sustainable Development in the New Carbon Economy*' (2003) 3S1 Climate Policy S41-S56 at S46.
[695] Miriam Ricci, Paul Bellaby and Rob Flynn, '*Engaging the Public on Paths to Sustainable Energy: Who has to Trust Whom?*' (2010) 38 Energy Policy 2633-2640 at 2635.

The EU and its member states are parties to the United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmnetal Matters (The Aahrus Convention). It grants members of the public the right to participate in the decision-making process on environmental matters. UNECE, in its 2012 findings, criticized the EU for failiung in its obligations under the Convention in respect of the programme "20% Renewable Energy by 2020" [696] Unfortunately, it still appears that, in spite of the obligations under the Convention, EU courts have rebuked pleas for a softening of the standing requirements in the context of direct actions against EU acts on environmental and public health matters.[697]

## 7.5 Democratic Input - Localism and Societal Participation

The normative content of international human rights law emphasizes the principles of non-discrimination, equality, empowerment, participation, and accountability.[698] In essence, apart from the right that society has to a decent quality of life mentioned above, society also has every right to participate in the selection process for production and consumption of energy (as observed above). Localism is rooted in communitarianism or social acceptance (examined above). With reference to renewables, localism refers to the co-ownership of energy infrastructure by the stakeholders of the area in which it is located. Ethical considerations, such as the need to preserve the earth's natural resources, are actually the main drivers of localism, and it may therefore be said to be a practical way of actualizing the desires of people who care about the environment.[699] Bulkeley *et al*, in their research, highlighted the process

[696] Anthony Watts, 'EU Violates Aarhus Convention in "20% Renewable Energy by 2020" Programme' (May 19, 2012). Available at wattsupwiththat.com/2012/05/19/eu-violates-aarhus-conventiuon-in-20%-renewable-energy-by-2020-programme. Accessed on 20 October 2016.

[697] Hendrik Schoukens, 'Access to Justice in Environmental Cases after the Ruling of the Court of Justice of 13 January, 2015: Kafka Revisited?' (2015) 31(81) Utrecht Journal of International and European Law 46.

[698] Stephen R. Tully, '*The Contribution of Human Rights to Universal Energy Access*' (2005-2006) 4 Nw. Univ. J. Int'l. Hum. Rts. 518.

[699] Gordon P. Walker, Patrick Devine-Wright and Bob Evans, '*Community Energy Initiatives: Embedding Sustainable Technology at a Local Level*' (2007b) ESRC End of Award Report http://geography.lancs.ac.uk/cei/index.htm accessed on 22 November 2013.

of ‘grassroots innovation’ in which novel forms of social organisations co-evolve with technologies.[700] These organisations, called ‘social niches’ are very important for understanding the process of urban responses to these technologies. This is another version of the socio-technical approach, based on a co-evolutionary view of technology and society which holds that technology and society co-determine each other and that the interactions give rise to irreversible development.[701]

Renewable energy technologies that have no local ownership are viewed as belonging to ‘absentee owners’ who really do not care about the immediate environment.[702] Local ownership should contribute to overcoming negative attitudes towards renewable energy technologies,[703] in addition to conferring property rights in such technologies. These technologies, some of which are based on joint ownership in a cooperative structure, ensure local participation and empowerment.[704] Renewable technologies therefore have a socio-cultural emotional appeal to those who are concerned with excessive industrial and large corporate dominance.[705]

For instance, in Denmark, there has been very little public opposition to wind farms development in the Danish countryside because, as the Danes say, ‘your own pigs don’t smell.’[706] Also, Gordon and Devine-Wright, while conducting a survey, found out that more direct and substantial involvement of local people in a project contributes to greater project acceptance and support, and that there was evidence that this involvement could have a positive impact on local people’s understanding of and

[700] Harriet Bulkeley, Vanesa Castan Brota and Anne Maassen, ‘*Low-Carbon Transitions and the Reconfiguration of Urban Infrastructure*’ (2013) Urban Studies 1-16.
[701] Rene Kemp, ‘*The Dutch Energy Transition Approach*’ in Raymond Bleischwitz, Paul J.J. Welfens and Zhongxiang Zhiang (eds.), *International Economics of Resource Efficiency: Eco-Innovation Policies for a Green Economy* (Springer-Verlag Berlin Heidelberg, 2011).
[702] D. Elliott, ‘*Public Reactions to Windfarms: The Dynamics of Opinion Formation*’ (1994) 5(4) Energy and Environment 343-362.
[703] Matthias Otto Muller *et al*, ‘*Energy Autarky: A Conceptual Framework for Sustainable Regional Development*’ (2011) 39 Energy Policy 5800 at 5801.
[704] Gordon Walker *et al*., ‘*Harnessing Community Energies: Explaining and Evaluating Community-Based Localism in Renewable Energy Policy in the UK*’ (2007) 7 Global Environmental Politics 64-82.
[705] Noam Lior, ‘*Sustainable Energy Development: The Present (2009) Situation and Possible Paths to the Future*’ (2010) 35 Energy 3976-3994 at 3981.
[706] Dave Elliott, ‘*Renewable Energy and Sustainable Futures*’ (2000) 32 Futures 261-274.

support for renewable energy more generally.[707] In Denmark, wind energy technology has developed through more than 3,000 cooperative wind turbines and at least 150,000 owners.[708]

Even if the locals are not equity partners in the project, their involvement at the planning stage makes them have a sense of belonging. The planning laws in each country therefore go a long way in ensuring adequate participation by affected communities, allowing developers to take their interests into consideration in the fabrication, location and possible ownership of such technologies. In addition, the EIA process ensures public participation through public hearings before approvals are granted for such technologies. This should ensure that such technologies are adapted to the needs of each host community through appropriate local needs assessment. It is however observed that current EIA and planning laws do not make special provisions for the peculiar needs of a community beyond environmental considerations. Furthermore, such laws do not make provision for possible mandatory equity participation of host communities in renewable energy projects. However in Germany, a legal basis for ownership of these projects is provided for under local laws.[709] The Renewable Energy Act provides both the legal and financial basis for small-scale development and ownership of renewable energy technologies.[710]

Recently in Germany, another dimension was introduced to the issue of localism as project developers of a solar photovoltaic plant had to relocate a branch of their corporation responsible for taxation in order to gain the support of a local community, as the taxes would be of benefit to the community.[711] While Felix Mormann attaches a cost element to this and views it as an economic challenge,[712] it is submitted that the

[707] Gordon Walker and Patrick Devine-Wright, '*Community Renewable Energy: What should it Mean?*' (2008) 38 Energy Policy 497-500 at 499.
[708] Danyel Reiche and Mischa Bechberger, '*Policy Differences in the Promotion of Renewable Energies in the EU Member* States' (2004) 32 Energy Policy 843 at 846.
[709] Li Wen Li *et al*, '*Transitioning to Community-Owned Renewable Energy: Lessons from Germany*' (2013) 17 Procedia Environmental Sciences 719-728 at 724.
[710] Ibid.
[711] Unternehmer Krinner, *Bayerns ungekronter Somnenkonig* SPIEGEL ONLINE (2010) http://www.spiegel.de/wirtschaft/unternehmen/0,1518,706125,00.html accessed on 22 November 2013
[712] Felix Mormann, '*Requirements for a Renewables Revolution*' (2011) 38 Ecology L.Q. 903 at 928.

negligible costs associated with such moves will be offset by the benefits derivable from the public support for the technologies. Also, the immediate host community benefits from the development that will be brought due to the location of the technology. The development is manifested in various forms such as the increase in social amenities needed by the staff that will run the technologies.

Societal participation has become vital in the evolution of renewable energy technologies. In 1994, Norgaard used a coevolutionary framework to analyse how technologies are imposed in furtherance of development, influencing local systems of production and consumption.[713] It may be said that conventional energy technologies are imposed technologies which replaced the traditional systems of production existing in pre-industrial times. A return to these traditional systems simply means a return to renewable energy sources which have the potential to engineer societal growth. Geels utilized the transition theory,[714] which explains the process of evolution of the energy system from one stage to another. Vergragt and Brown, in pushing the theory further, suggested the utilization of societal participation, which includes visioning exercises aimed at creating a shared goal among stakeholders.[715] This also involves a small-scale demonstration of these technologies in a social context.[716] These demonstration programmes are necessary to test the new technologies and to prove their technical and economic viability to the society.[717] Such programmes may be provided for under current planning and EIA laws, possibly prior to the grant of approval.

Ottinger and Williams observed that the main challenges facing development of low carbon renewable technologies are the lack of information about their benefits to social development and adaptability of the design of the projects to meet the needs of the

[713] Richard B. Norgaard, '*Development Betrayed: The End of Progress and a Coevolutionary Revisioning of the Future*' (Routledge London and New York, 1994).
[714] Frank W. Geels, *Technological Transitions and System Innovations: A Co-evolutionary and Socio-technical Analysis* (Edward Elgar Publishing, 2005).
[715] Philip J. Vergragt and Halina Szejnwald Brown, '*Sustainable Mobility: From Technological Innovation to Societal Learning*' (2007) 15 Journal of Cleaner Production 1104-1115 at 1106.
[716] Halina Szeinwald Brown *et al*, '*Learning for Sustainability Transition through Bounded Socio-technical Experiments in Personal Mobility*' (2003) 15(3) Technology Analysis and Strategic Management 291-315.
[717] Sudhakar Reddy and J.P. Painuly, '*Diffusion of Renewable Energy Technologies – Barriers and Stakeholders' Perspectives*' (2004) 29 Renewable Energy 1431-1447 at 1445.

communities through their involvement at the design stage.[718] Information dissemination is an important engine of social development through renewable energy technologies. Apart from counteracting the negative media reports on such technologies, information dissemination ensures an early involvement of the public in the planning process, making them aware of the benefits of those technologies and enhancing social cohesion in the process.[719] Hansen observed that renewable energy enthusiasts need to counter the perceived misinformation disseminated about these technologies, especially by fossil fuel lobbysts.[720] For instance in Sweden, opposition has been traced to negative media coverage and the lukewarm attitude of policy makers to disprove these negative reports.[721] It may however be said that the various planning and EIA laws should provide ample opportunity for information dissemination on the sustainable development benefits of these technologies. Furthermore, EU Directive 2014/95 on disclosure of non-financial and diversity information may be instructive at this stage. The directive requires concerned companies to disclose information on environmental matters among others.[722]

Localism can also be seen in the local ownership of some of these technologies at the household level. For instance in the UK, as far back as 2006, the Low Carbon Buildings Programme provided subsidies for households to encourage development. The Feed-in-Tariffs (Specified Maximum Capacity and Functions) Order 2010 may also be referred to in this regard. It makes provision for guaranteed revenue streams for small energy projects. Furthermore, Droege pointed out that virtual energy utilities can be created by virtue of public-private partnership investments in these technologies.[723]

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[718] Richard L. Ottinger and Rebecca Williams, '*Renewable Energy Sources for* Development' (2002) 32 Envtl. L. 331 at 339.

[719] Joyce McLaren Loring, '*Wind Energy Planning in England, Wales and Denmark: Factors Influencing Project Success*' (2007) Energy Policy 35(4) 2648-2660 at 2658.

[720] J. Hansen, '*Global Warming Twenty Years Later: Tipping Points Near*' (2008) The National Press Club Presentation, Washington DC, U.S.A., 1-4.

[721] Anna Bergek, Staffan Jacobsson and Bjorn Sanden, ' "*Legitimation" and "Development of Positive Externalities": Two Key Processes in the Formation Phase of Technological Innovation Systems*' (2008) 20 Technology Analysis and Strategic Management 575-592.

[722] Non-Financial Reporting. http://ec.europa.eu/finance/accounting/non-financial_reporting/index_en.htm accessed on 15 May, 2015.

[723] Peter Droege, '*100% Renewable Energy: The Essential Target*' in Peter Droege (ed.), *100% Renewable: Energy Autonomy in Action* (Earthscan, 2009) 28.

Localism tends to avoid the "lock-in system" associated with conventional energy sources where the entire production and distribution system is left in the hands of major state and private corporate operators. There is currently a noticeable emergence of distributed generation of sustainable energy projects, although this change towards more and more decentralized power generation will require changes to current safety, control and communication technologies.[724] Furthermore, Buchholz *et al* identified an added benefit of localism when they stated that, from a society's point of view, small-scale projects allow more experimentation due to lower associated impacts in case of failure.[725] In other words, the impact of a failed experiment into a small scale green energy technology is minimal.

Also, Stamford has identified projects that are sited in a community but are owned, not only by the locals, but also by those outside the community who have interest in the projects and chose to be partners.[726] The bottom line is that localism has introduced the element of participatory democracy into energy generation in terms of information sharing and distributed ownership of some of these technologies. Rogers *et al* identified one benefit of localism by criticizing the current energy supply structure which is dominated by centralized generation and one-way supply, casting the public majority in the narrow role of relatively passive and unreflective energy consumers.[727] This, they said, encourages unsustainable consumption of energy, a challenge community renewable energy projects are expected to counteract because they imply increased material interaction with renewable energy, fostering new social norms for energy generation and consumption and enhancing social cohesion. These norms which enhance social cohesion create a type of 'social capital' whose core components are social networks and sanctions that collectively induce strong emotional bonds in the

[724] T.J. Hammons, '*Integrating Renewable Energy Sources into European Grids*' (2008) 30 Electrical Power and Energy Systems 462-475.
[725] Thomas S. Buchholz, Timothy A. Volk and Valerie A. Luzadis, '*A Participatory Systems Approach to Modelling Social, Economic and Ecological Components of Bioenergy*' (2007) 35 Energy Policy 6084-6094 at 6089.
[726] Mike Stamford, '*Community Ownership: The Best Way Forward for UK Wind Power*' (2004). M.Sc. Dissertation, University of East Anglia, Norwich http://www.uea.ac.uk/env/all/teaching/eiaams/pdf_disertations/2004/stamford_Mike.pdf accessed on 23 November 2013.
[727] Jennifer C. Rogers *et al*, '*Social Impacts of Community Renewable Energy Projects: Findings from a Wood Fuel Case Study*' (2012) 42 Energy Policy 239-247.

community.[728] Also, the norms become a part of the shared meaning of the community and contribute to the social well-being of the group, not just through the protection of resources, but through the development of trust, collaboration and social cohesion, as provided for under the 2009 Renewables Directive.[729]

Locally owned projects, apart from being warmly accepted by the people, also appear to have fewer problems in scaling through the hurdles of planning applications.[730] For instance, while Heiskanen *et al* observed that collaboration in a low carbon community project may help to empower individuals by providing a feeling of competence, feedback on the impact of their and others' actions and a 'voice' in devising solutions.[731] Wouters however observed a major challenge faced by locally owned projects which he refers to as 'microgrids.' [732]He observed that there was a lack of standardization and regulations regarding the operation on and off-grid as well as both the energy and monetary transfers between microgrids and the central grid, as well as between different microgrid participants.[733] In the EU, the Third Energy Package has the tackling of this challenge as one of its objectives. How far they have gone in ensuring seamless interconnectivity is however subject to argument.

## 7.6 Influence of Renewable Energy Technologies on Societal Behaviour

Human activities, especially their uncontrolled consumption of fossil fuels, are turning out to be the greatest threats to conservation of energy reserves. Transition to

[728] Aldridge S. Halpern and S. Fitzpatrick, '*Social Capital: A Discussion Paper*' London England. Performance and Innovation Unit, 2002) http://www.cabinetoffice.gov.uk/strategy/~media/assets/www.cabinetoffice.gov.uk/strategy/socialcapital%20pdf.aspx accessed on 23 November 2013.

[729] Michael Peters, Shane Fudge and Tim Jackson eds., '*Low-Carbon Communities: Imaginative Approaches to Combating Climate Change Locally*' (Edward Elgar Publishing Ltd. 2010) 4.

[730] Centre for Sustainable Energy (CSE) *et al*, '*Delivering Community Benefits from Wind Energy Development: A Toolkit*' (2007) Report for the Renewables Advisory Board, The Department of Trade and Industry, London.

[731] Eva Heiskanen *et al*., (n.672) at 7588.

[732] Carmen Wouters, '*Towards a Regulatory Framework for Microgrids – The Singapore Experience*' (2015) 15 Sustainable Cities and Society 22-32 at 24.

[733] Ibid.

economies powered by renewable energy sources will require shifts in social practices and the norms and values which shape them.[734] While advocates of energy efficiency might want to suggest a solution in restrictions on consumption, the emergence of low carbon renewable technologies actually influences and shapes human behavior in the sustainable consumption of energy,[735] (although other writers like Guy disagree with this 'technological determinism').[736] This influence of technology on human behavior may be seen, for instance, in the current conceptualization of buildings – technology combinations that will maximize resource capture, and the current gradual shift from concentrated ownership of power generation and distribution capacity to a more democratic model with many stakeholders.[737] This influence also creates a symbiotic relationship between society and these technologies. Furthermore, there is an extension of the symbiotic relationship to that existing between energy providers and consumers. Chappels *et al* mentioned the dynamic relationship between utility service providers and domestic consumers.[738] This is the energy system which is the relationship between production and consumption of energy services necessary for human activities in a society.[739]

Owens and Driffill, in their research, stated that pro-environmental attitudes do not necessarily lead to significant shifts in behavior needed for energy conservation, while governmental intervention through the imposition of economic instruments like taxes may lead to political risks.[740] The question may then be asked: How do renewable energy technologies shape consumption and force social acceptance through legal

[734] Susie Moloney, Ralph E. Horne and John Fien, '*Transitioning to Low Carbon Communities – From Behaviour Change to Systemic Change: Lessons from Australia*' (2010) 38 Energy Policy 7614-7623 at 7622.
[735] Elizabeth Shove, '*Efficiency and Consumption: Technology and Practice*' in Tim Jackson (ed.), *The Earthscan Reader on Sustainable Consumption* (Earthscan UK and USA, 2006) 293.
[736] S. Guy, '*Designing Urban Knowledge: Competing Perspectives on Energy and Buildings*' (2006) 24(5) Environment and Planning C: Government and Policy 645-659.
[737] Geoff O'Brien (n.681) at 7552.
[738] H. Chappells *et al*, '*Domestic Consumption Utility Services and the Environment: Final Domus Report 2000*'. Final Report of an EU DG X II Project ENV-CT97-04-67, Universities of Lancaster and Wageningen and Lund.
[739] Toshihiko Nakata, Diego Silva and Mikhail Rodionov, '*Application of Energy System Models for Designing a Low-Carbon Society*' (2011) 37 Progress in Energy and Combustion Science 462-502 at 467.
[740] Susan Owens and Louise Driffill, '*How to Change Attitudes and Behaviours in the Context of Energy*' (2008) 36 Energy Policy 4412-4418.

regulation? Regulations employ several means to reshape consumption such as economic instruments, information dissemination, self-regulation and licensing.[741]

One of the regulations which shape consumption is the EU Directive 2010/31/EU – the Energy Performance of Buildings Directive - which provides under its preamble 3 that reduced energy consumption and an increased use of energy from renewable energy sources have an important role to play in promoting energy security and regional development, particularly in rural areas. The directive therefore provides in its article 9(1)(a) that all new buildings should be nearly zero-energy consumption buildings by 31 December, 2020. Also, under article 9(1)(b), new buildings occupied and owned by public authorities must be nearly zero-energy consumption buildings by 31 December, 2018. The directive follows a realization of the fact that buildings, especially those in the residential sector, consume a lot of energy.[742]

Enforced adjustments in societal energy consumption that may be occasioned by government subsidies for green energy technologies raise the issue of energy poverty. Energy poverty may be defined as a situation whereby a household would need to spend more than 10% of its income on heating in order to obtain an adequate level of warmth.[743] Fiscal instruments, backed by legal instruments, and aimed at encouraging production and consumption of renewable energy technologies may have led to increases in conventional energy prices as the financial costs of the subsidies are shifted by the energy companies to the final consumers. Knopf *et al* however believe that such fiscal policies actually incentivize changes in energy consumption patterns and lifestyles of final consumers.[744] In fact, the energy performance of a building has been identified as the key factor to take or keep households permanently out of energy

[741] Barry Barton, '*The Theoretical Context of Regulation*' in Barry Barton *et al* (eds.), *Regulating Energy and Natural Resources* (Oxford University Press, 2006) 14.
[742] Andreas Uihlein and Peter Eder, '*Policy Options towards an Energy Efficient Residential Building Stock in the EU-27*' (2010) 42 (No. 6) Energy and Buildings 791-798.
[743] Simon Dresner and Paul Ekins, '*Economic Instruments to Improve UK Home Energy Efficiency without Negative Social Impacts*' (2006) 27(1) Fiscal Studies 47-74 at 49.
[744] Brigitte Knopf *et al*, '*Managing the Low-Carbon Transition – From Model Results to* Policies' (2010) Vol. 31 The Energy Journal (Special Issue 1) 223 at 235.

poverty.[745] In addition, the laws may be amended such that a part of the subsidies is used to encourage affected households experiencing energy poverty to obtain sustainable energy technologies.[746]

A Year 2012 review by the European Trade Union Institute is equally instructive. It was revealed that there was no correlation between progress towards low carbon clean energy generation and fuel poverty. An example of Sweden was given, which has the highest share and one of the highest rates of progress towards renewables, but which has one of the lowest rates of fuel poverty and utility bill arrears.[747] It was further observed that other countries seem to be doing well in the green energy transformation of energy generation relative to social terms, and that energy poverty was more linked to general income levels, lower levels of social protection, the effects of the global economic crisis and the attendant austerity measures.

Haas *et al* highlighted a success story in the growth of renewable energy technologies within the EU in recent years which has been triggered by feed-in-tariffs that are implemented in a technology-specific manner and involving modest costs for European citizens due to the long term price security of the system.[748] Government programmes such as the feed-in-tariff (FIT) and Renewable Heat Incentive (RHI), backed by appropriate legislation, can gradually eliminate the challenge of energy poverty. These fiscal measures occur in accordance with the European Commission competition and environmental Rules for the energy sector such as the Community Guidelines on State Aid for Environmental Protection. (Communication of the Commission of 3rd February, 2001).[749] Saunders *et al* suggested that, in view of the fact that those in fuel poverty are unlikely to be in a position to invest directly in renewable energy for their homes so as to

[745] Diana Urge-Vorsatz and Sergio Tirado Herrero, '*Building Synergies between Climate Change Mitigation and Energy Poverty Alleviation*' (2012) 49 Energy Policy 83-90 at 86.
[746] E. Lacroix and C. Chaton, '*Fuel Poverty as a Major Determinant of Perceived Health: The Case of France*' (2015) 129(5) Public Health 517-524.
[747] European Trade Union Institute, '*The European Divide in Clean Energy and Fuel Poverty*' http://www.etui.org/content/.../8850.../CHAPTER+5+Benchmarking+2013.pdf accessed on 02 January 2014.
[748] Reinhard Haas *et al*, '*Efficiency and Effectiveness of Promotion Systems for Electricity Generation from Renewable Energy Sources – Lessons from EU Countries*' (2011) 36 Energy 2186-2193.
[749] Jose M. Cansino, '*Tax Incentives to Promote Green Electricity: An Overview of EU-27 Countries*' (2010) 38 Energy Policy 6000-6008.

benefit from the FIT and RHI programmes, third party investments could be provided by an existing energy supplier or other private company.[750] In their case studies of two low income communities in Nottingham and Chale on the benefits of FIT and RHI programmes, there was a clear evidence of reduction in fuel bills in the benefitting households.[751]

## 7.7 From Societal Decline to Societal Benefit

### 7.7.1 Rural Development and Urban Regeneration

Overwhelming oil dependency and abundant, cheap coal power have boosted the drive to urbanization, transforming regional economies, revolutionizing urban supply lines but increasingly disconnecting cities from the agrarian hinterlands.[752] Siting of low carbon renewable energy technologies in rural areas can help reduce poverty in those areas (an economic factor), which in turn will reduce rural-urban migration[753] and the subsequent pressure on the infrastructure of the urban areas (a social factor). As Europe commences its gradual transition to a low carbon economy, the infrastructural development that has been associated with hosts of conventional energy sources in Europe such as Aberdeen and Stavanger may also be felt in the rural areas. Rural areas can particularly benefit from a decentralized or distributed energy system based on available local renewable energy resources on a small scale.[754] This provides improved access to energy for development. Lloyd and Subbarao observed that small-scale renewable energy projects can help local communities to access energy services

[750] R.W. Saunders, R.J.K. Gross and J. Wade, '*Can Premium Tariffs for Microgeneration and Small Scale Renewable Heat Help the Fuel Poor, and if so, how? Case Studies of Innovative Finance for Community Energy Schemes in the UK*' (2012) 42 Energy Policy 78-88 at 81.
[751] Ibid.
[752] Peter Droege, '*Energy, Cities and Security: Tackling Climate Change and Fossil Fuel Risk*' (2007) 8 Whitehead J. Dipl. & Int'l Rel. 55 at 56.
[753] Thomas B. Johansson *et al*., '*Renewable Fuels and Electricity for a Growing World Economy: Defining and Achieving the Potential*' (1993) Vol. 4 Issue3 Energy Studies Review (Article 6).
[754] Toshihiko Nakata *et al*. (n. 739) at 488.

and expand livelihood opportunities, thereby collectively contributing to poverty alleviation and increasing their resilience.[755]

A classic example of rural development through low carbon renewable energy technologies can be found in the Isle of Eigg in Scotland where shareholders of the Isle of Wright Heritage Trust made a 10-year plan of how they would like the island to develop through the creation of an off-grid renewable electricity system.[756] On 1st February, 2008, the Isle of Eigg switched on its island electrification project which makes 24 hour power available for the first time to all residents and businesses on the island.[757] The project is a world leader in the integration of multiple renewable energy sources into a grid system to supply an isolated and scattered small community.[758] Munday *et* al observed that policies such as the Renewables Obligation (a United Kingdom Regulation), because of their-market oriented nature, favour large renewable energy producers to the detriment of small producers.[759] That notwithstanding, it is suggested that such an obligation be extended to siting of renewable energy projects in rural areas.

It is not only the rural areas that stand to benefit from transition to a low carbon renewable energy-powered economy. Urban areas may also benefit from a regeneration designed to ensure sustainability courtesy of these technologies. The Masdar City Project in Abu Dhabi, United Arab Emirates provides a typical example of an arcology project powered by low carbon renewable energy technologies and designed to provide the highest quality of life and the best working environment for its inhabitants.[760] The lesson for Europe is that, when the project is completed, it will potentially integrate various applications of existing renewable technologies, cultivate an

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[755] Bob Lloyd and Srikanth Subbarao, '*Development Challenges under the Clean Development Mechanism (CDM) – Can Renewable Energy Initiatives be put in Place before Peak Oil?*' (2009) 37 Energy Policy 237-245 at 244.

[756] Annabel Yadoo, Alexandra Gormally and Heather Cruickshank, '*Low Carbon Off-Grid Electrification for Rural Areas in the United Kingdom: Lessons from the Developing World*' (2011) 39 Energy Policy 6400-6407 at 6401-6402.

[757] http://www.isleofeigg.net/eigg-electric.html accessed on 23 November 2013.

[758] Ibid.

[759] Max Munday, Gill Bristow and Richard Cowell, '*Wind Farms in Rural Areas: How Far Do Community benefits from Wind Farms Represent a Local Economic Development Opportunity*' (2011) 27 Journal of Rural Studies 1-12 at 4.

[760] http://masdarcity.ae/en/ accessed on 23 November 2013.

innovative academic and business community and generate significant intellectual property in the drive towards social development and sustainability.[761]

### 7.7.2 Renewable Energy Technologies and Competition for Land

Development of renewable energy technologies may necessitate the utilization of land meant for social development such as recreational parks, games reserves and farmlands. It has been observed, for instance, that present day food agricultural production is under severe pressure from the high commercial demand of industrialized countries for biomass amid growing population, thereby disrupting the social fabrics of communities.[762] Endres suggests a solution which is to incentivize biomass cropping on lands not reserved for food production such as 'marginal', 'idle', 'abandoned' and 'degraded' lands (MIDA lands).[763] Most (if not all) major low carbon renewable technology projects are located far from built up areas. To mimimize the adverse effect on food production, the EU has proposed a 5% cap on food-based feed stock towards non-food based cellulosics.[764] Furthermore, Directive 2009/28/EC provides that the commission shall, every two years, report to the European Parliament and the Council on the impact on social sustainability in the community and in third countries of increased demand for biofuels on the impact of community biofuel policy on the availability of foodstuffs at affordable prices and wider development issues.[765] The Report shall address the respect of land-use rights.[766] Biofuels coming from dedicated non-food feedstock may therefore offer no competition or threat to food production.[767]

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[761] Sam Nader, '*Paths to a Low-Carbon Economy: The Masdar Example*' (2009) 1 Energy Procedia 3951-3958 at 3952.
[762] Edward S. Cassedy, *Prospects for Sustainable Energy: A Critical Assessment* (Cambridge University Press, 2000) at 102-103.
[763] Jody M. Endres, '*Bioenergy, Resource Scarcity, and the Rising Importance of Land Use Definitions*' (2012) 88 N.D. L. Rev. 559.
[764] Proposal for a Directive of the European Parliament and of the Council Amending Directive 98/70/EC relating to the Quality of Petrol and Diesel Fuels. COM (2012) 595 final which seeks to amend Directive 2009/28/EC.
[765] Article 17.
[766] Ibid.
[767] David Tilman *et al*, '*Beneficial Biofuels – The Food, Energy and Environment Trilemma*' (2009) 325 Science 270-71.

The issue of Not-In-My-Backyard (NIMBY) may be said to have arisen in part out of concerns over land utilization. The issue to be determined is whether NIMBY is rooted in societal rejection of renewable energy technologies or the selfish interests of those opposed to those technologies. For instance, Bell *et al* have observed a 'social gap' between the high level of public support for wind energy technology and the local opposition by those living in the immediate environment where the project is sited.[768] What may be deduced from here is that the opposition is mainly by those closest to the facility while, generally speaking, there may be a reasonable measure of public support for it. Warren *et al* supported this observation when they observed that the distance from a project greatly determines the level of opposition, thereby buttressing the issue of selfishness.[769] This 'selfish' response may perhaps explain why the opposition to such projects, which is strongest at the planning application stage, becomes weaker and negligible when the project is about to be constructed or during operations.[770]

Planning and spatial laws have, to some extent, sorted out some of the issues associated with NIMBY. In fact, Keirstead stated that a proliferation of rules associated with what he called low carbon decentralized technologies which guide their construction and installation proves that these technologies are relatively well accepted by planners.[771] For instance, the British Wind Energy Association (BWEA) observed that, although wind farms may occupy large land areas, the actual footprint is between 1% and 2% of the total site area, making the land space between the towers available for other uses.[772] This is in addition to the fact that, evidence gathered from operational wind farms in the United Kingdom have revealed that they have no negative effect on house prices.[773]

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[768] D. Bell, T. Gray and C. Haggett, '*The "Social Gap" in Wind Farm Siting Decisions: Explanations and Policy Responses*' (2005) 14(4) Environmental Politics 460-477.
[769] Charles R. Warren *et al*, '*Green on Green: Public Perceptions of Wind Power in Scotland and Ireland*' (2005) 48(6) Journal of Environmental Planning and Management 853-875.
[770] Ibid.
[771] James Keirstead, '*What Changes, if any, would Increased Levels of Low-Carbon Decentralised Energy have on the Built Environment?*' (2008) 36 Energy Policy 4518-4521.
[772] BWEA 2007, '*Frequently asked Questions*' http://www.bwea.com/ref/faq.htm/ accessed on 28 November 2013
[773] Wind Prospect, '*Public Opinions*' http://breakerhillwindfarm.co.uk//cms/actpdf_583.pdf accessed on 28 November 2013.

## 7.8 Conclusion

Man will always continue to depend on natural resources whether renewable or non-renewable for his survival. However, a failure to act now to engender an urgent shift to a renewable energy-powered economy can lead to societal collapse. Renewable energy sources have seen a growing importance in the EU energy market ( and global market as well), helping to decrease import dependency, diversifying sources of production and thereby contributing to sustainable development through a sustained resilience in the energy supply system.[774] Investments in renewable energy technologies are a major avenue of social development and therefore a means of upholding the fundamental rights of the people to energy. In essence, the social development goals of these green technologies include the supply and provision of energy services at reasonable costs, maintaining security of supply and contribution to wider social and environmental aims of sustainable development.[775]

Social development is visible through renewable energy technologies as it ensures the fundamental rights of the society to at least the basic ingredients of development like societal participation and the upholding of such rights. Societal acceptance of these technologies demonstrates its happiness with them, a non-declining utility and gives society the fundamental right to have a say in energy generation. Society is involved in the evolution of the legal instruments that govern the production and consumption of the common good – in this case energy reserves. Furthermore, society is actively involved in the evolution of renewable energy technologies, paving the way for a sentimental connection between the two that eliminates wanton production and consumption of energy.

These technologies have introduced procedural sustainability which ensures a democratization process of energy generation and consumption. This democratization

[774] Gustav Resch, '*Potentials and Prospects for Renewable Energies at Global Scale*' (2008) 36 Energy Policy 4048-4056 at 4055.

[775] Timothy J. Foxon, Geoffrey P. Hammond and Peter J.G. Pearson, '*Developing Transition Pathways for a Low Carbon Electricity System in the UK*' (2010) 77 Technological Forecasting and Social Change 1203-1213 at 1208.

process encourages the diversification of ownership of energy generation and transmission, especially at the local level, leading to rural development and a subsequent reduction in rural-urban migration. It can however be stated that the laws on distributed energy generation are too broad as they are focused on all other sources of energy with no adequate focus on renewable energy technologies. Furthermore, on the issue of local ownership of these technologies, a major challenge is the lack of standardization and regulation regarding interconnectivity between these microgrids and the central grid and between different microgrids. This is notwithstanding the giant strides of the EU Third Energy Package.

Social acceptance of these technologies has also reshaped societal behavior towards energy conservation and the search for alternative energy sources. This has shown that a transition to these technologies has an appreciable level of fairness to all. The law aids these technologies in the march towards ensuring social development through means such as planning laws and fiscal instruments backed by enabling laws which address areas of concern in the development of these technologies.

Also, relevant laws that govern the design of the technologies enable them meet the special needs of a particular locality and are equally important. These design specifications ensure a stronger socio-technical relationship needed for these technologies to evolve. Furthermore, the various avenues provided for under the law have ensured a measure of social acceptance of these technologies, leading to social cohesion as required under the 2009 Renewables Directive.

# CHAPTER EIGHT

# SPECIFIC LAWS IMPACTING ON RENEWABLE ENERGY TECHNOLOGIES IN THE EU

## 8.1 Introduction

This chapter examines relevant laws which have played appreciable roles in the evolution of renewable energy technologies. This is important, bearing in mind the fact that the state that will enforce the obligations to future generations needs the law to ensure that the obligations are carried out. Existing EU laws will be examined to determine whether they are effective enough as they are and whether they need to be amended to adequately ensure the protection of these sustainable energy technologies. The argument is that these legislations focus on energy security in general (with too much emphasis placed on conventional energy sources), to the detriment of renewable energy technologies.

The existing legal instruments will also be examined to determine whether the climate change parameters on which they appear to be based are detrimental to the development of renewable energy technologies. There is a determination on whether to amend existing laws in view of their tendency to focus too much on climate change considerations or whether to adopt new laws dedicated solely towards renewable energy technologies. The conclusion will be that climate change parameters on which existing laws are based are not appropriate for energy security considerations in the drive to encourage renewable energy technologies. Also, where the laws focus on energy security concerns (rather than climate change concerns), the focus is on energy in general, with inadequate attention dedicated to renewable energy technologies.

This chapter proceeds with awareness of the fact that vested interests in conventional electricity generation remain politically and commercially active and are actively lobbying either to repeal or stifle the effectiveness of existing or proposed renewable

energy promotion laws.[776] It then proceeds on the assumption that, although the technological response of renewable energy infrastructure has been available for a while, it is the legal and policy response that has proved elusive and is yet to be realized.[777] The law therefore has a major role to play in the development of renewable energy technologies.

## 8.2 Criteria for Measuring the Effectiveness of Existing Laws

The effectiveness of a legal instrument may generally be determined by the extent to which its provisions have been implemented by parties to it. However, this yardstick is inadequate for the instruments examined in this chapter. The following additional criteria are used:

- The level of provision of punitive measures in existing laws
- Binding nature of existing laws?
- Application of climate change parameters in the development of renewable energy technologies in existing laws

Article 256 TFEU[778] has given the general court jurisdiction to hear and determine cases on its Articles 263, 265, 268, 270 and 272. For instance, Article 263 grants the Court of Justice of the EU jurisdiction to review the legality of acts of EU institutions. In addition, powers have been conferred on the Court of Justice of the EU to impose a lump sum payment which shall not exceed the amount specified by the Commission. Of particular interest is article 258 TFEU which empowers the Commission to deliver a

[776] James Prest, '*Summary: Law and Policy to Advance Renewable Energy – A Comparative Colloquium*' (2011) Renewable Energy L. & Pol'y Rev. 171-177.
[777] Steven Ferrey, '*Restructuring Green Grid: Legal Challenges to Accommodate New Renewable Energy Infrastructure*' (2009) 39 Envtl. L. 977.
[778] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?ur.=CELEX;12012E/TXT&from=EN. Accessed on 14 November 2016

reasoned opinion on a matter where a Member State has failed to fulfill an obligation under the treaties. If the Member State does not comply with the reasoned opinion within a given period, the Commission can refer the matter to the Court of Justice of the EU. Failure to fulfill an obligation under article 258 applies to several instances, including the failure to transpose, apply and enforce a directive. [779]

Article 260(3) TFEU therefore empowers the Commission to bring a case before the Court on the grounds that the Member State concerned has failed to fulfill its obligations to notify measures transposing a directive adopted under legislative a procedure. Appropriate financial penalty can be imposed on such a defaulting Member State. The European Commission in May, 2016, issued a reasoned opinion urging Portugal to step up protection of indigenous habitats and species, failing which the case may be referred to the Court of Justice of the EU.[780] The Commission also decided to refer Poland to the Court of Justice of the EU for establishing restrictions in Polish Law against certain imported biofuels and raw materials for biofuels.[781]

Also, individuals may rely on the principle of 'direct effect' established by the European Court of Justice in *Van Gend En Loos v. Nederlandse Administratie Der Belastingen*.[782] It was held in that case that a citizen could enforce rights granted under European Community (now EU) legislation against the state. The 'direct effect' principle was applied in *Van Duyn v. Home Office*[783] to make the Free Movement of Workers Directive[784] directly applicable in the United Kingdom based on the request of the applicant. Witte observed that the 'direct effect' principle is still very relevant for reasons which he stated.[785] One of such reasons is that some EU laws which, taken by themselves, seem sufficiently operational, but may not be enforced by national courts

[779] Stine Andersen, '*The Enforcement of EU Law: The Role of the European Commission*' (Oxford University Press, 2012).
[780] European Commission – Fact Sheet, '*May Infringements*' Package: Key Decisions. (Brussels, 26 may 2016)
[781] Ibid.
[782] (1963) ECR 1: (1963) Case 26/62.
[783] (1974) C-41/74.
[784] Directive 64/221/EC.
[785] Bruno de Witte, '*Direct Effect, Primacy, and the Nature of the Legal Order*.' Appearing in Paul P. Craig and Grainne De Burca (eds.), '*The Evolution of EU Law*' (Oxford University Press, 2011) at p. 332.

for peculiar reasons.[786] Ginka provides a rationale for the principle by stating that it is a development process based on the European Court of Justice's efforts to make supranational bodies, Member States and national bars have a uniform understanding and thus to make them uniformly applying the supreme EU law.[787]

Some Member States became increasingly keen on limiting access to justice in environmental cases for citizens without a direct and personal interest and by retaining stringent national procedural standards.[788] The European Court of Justice intervened on this issue in the *Slovak Brown Bear Case*.[789] The Court pointed out that national courts must interprete their national laws in accordance with the objectives of the provisions of Article 9(3) of the Aarhus Convention and that of effective judicial protection of the rights conferred by EU law. This is to enable organizations (and individuals) to challenge a decision taken following administrative proceedings liable to be contrary to EU law.[790]

The relevant provisions of the TFEU should be adequate to cater for concerns on the need for punitive measures in cases of non-compliance with its provisions and those of other legal instruments on energy sustainability obligations, especially those of the 2009 Renewables Directive which is silent on punitive measures. However, it may be argued that the EU has not done enough to ensure that member states meet their annual targets under the 2009 Renewables Directive. There appears to be a dearth of enforcement proceedings specifically on the development of renewable energy technologies to meet 2020 energy sustainability targets in the EU. There highlights the need for an ombudsman (an issue discussed further in chapter nine) who may be saddled with the responsibility of ensuring that sustainable energy targets are met and that the remaining conventional sources of energy are conserved.. In addition, it is stated that existing legal instruments on energy security in the EU focus on energy in general, with renewable energy technologies not being given the adequate focus they

[786] ibid
[787] Ginka Tchervenkova, '*About the Nature of the EU Law System, the EU Law Provisions…*' (GRIN, 2011) at p. 3.
[788] Hendrik Schoukens and Kees Bastmeijer, '*Species Protection in the European Union*.' Appearing in Charles-Hubert Born *et al* (eds.), '*The Habitats Directive in its EU Environmental Law Context – European Nature's Best Hope?*' (Routledge:Taylor and Francis Group, 2015) at p. 131.
[789] C-240/09. Judgement of 8 March 2011.
[790] Ibid.

deserve. Effectiveness may therefore be achieved if separate legal instruments are developed which have appropriate provisions on sanctions and adequate enforcement mechanisms and are dedicated to renewable energy technologies. On the third point, it is observed that existing laws may not be too hard to encourage investments in renewable energy technologies. On the last point, existing laws focus too much on climate change/carbon emission reduction. As such, the parameters used for targets set may be detrimental to the development of renewable energy technologies.

## 8.3 Legal Powers of the EU

Article 170, Treaty on the Functioning of the European Union (TFEU) creates a legal framework relevant to the development of renewable energy technologies. It provides that, in order to realise the goals of the internal market within the EU, efforts should be made to develop a trans-European network in sectors including the energy sector. Even though the intra-continental network is for the benefit of energy production, transmission and consumption in general, renewable energy technologies can also benefit from the network. Article 194(1)(c) of the TFEU has however created a distinct legal basis for renewables, separate from provisions in this and other legal instruments that covered a variety of issues including general energy security, energy efficiency and internal energy market matters.

Article 192(2)(c) of the treaty provides that the “Council shall, acting unanimously, adopt measures that significantly affect a Member State’s choice between different energy sources and the structure of its energy supply”. This gives the EU power to order a member state to generate and consume a particular type of energy. Although Article 194(2) of the same treaty provides that “measures taken by the EU to pursue its environmental policies such as energy efficiency and the development of renewable energy shall not affect a Member State’s right to choose between different energy sources”, this was made without prejudice to the provisions of Article 192(2)(c ) mentioned above (which appears to be in conflict with it).

Since EU treaties are superior to Directives,[791] it immediately raises the question whether the provisions of the Renewables Directive of 2009 (discussed below under paragraph 8.4) which impose targets on Member States are enforceable in a case where a Member State chooses not to comply with them. (This is in view of the weak enforcement provisions in the Directive). However, although the subsidiarity principle appears to have taken precedence in this critical area of environmental conservation, as a result of the growing concerns about energy security (and climate change), member states have begun to overcome their long standing reluctance to delegate powers over energy matters to the EU and a political consensus has started to emerge in the last few years to establish a stronger role for the EU in energy policy.[792] In any case the provisions of the TFEU, which are superior to those of the 2009 directive, empower the EU to act on green energy matters within the region.

## 8.4 Renewable Energy Directives 2001and 2009

In a 1997 White Paper, the EU Commission suggested an indicative target for the share of energy produced from renewables at 12% by 2010.[793] This provided the background for Directive 2001/77EC of September 27, 2001[794], the provision of which was expected to be implemented in the national laws of member states no later than October 27, 2003.[795] Implementation of the 2001 directive was severely limited by the indicative nature of its targets. In the Communication from the Commission entitled 'Renewable Energy: Progressing towards the 2020 Target',[796] it was stated that the limited and fragmented growth of Europe's renewable energy industry prior to 2009 resulted partly from limited EU regulatory framework. It was realized that, since renewable energy

[791] Andreas Gunst, '*Impact of European Law on the Validity and Tenure of National Support Schemes for Power Generation from Renewable Energy* Sources' (2005) 23 J. Energy & Nat Resources L. 95 at 99.
[792] Camilla Adelle, Marc Pallemaerts and Joana Chiavari, '*Climate Change and Energy Security in Europe: Policy Integration and its Limits*' (Swedish Institute for European Policy Studies, 2009) 19 www.sieps.se ; reviewing Marc Pallemaerts, '*Climate Change, Natural Gas and the Rebirth of EU Energy Policy*' (2008).
[793] EU Commission (1997) COM(97) 599 final.
[794] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32001L0077. Accessed on 15 March 2015.
[795] Niels I. Meyer, '*European Schemes for Promoting Renewables in Liberalized Markets*' (2003) 31 Energy Policy 665-676 at 667.
[796] COM/2011/0031final/.

would form the heart of any future low carbon energy sector, a comprehensive and robust supportive legislative framework was needed.

The new 2009 Renewables Directive (Directive 2009/28/EC) [797]moved from the era of setting indicative targets to the setting of legally binding targets for all EU member states. It is one of the products of the EU Climate and Energy Package and distributes overall renewable energy percentage common target between the member states. This distribution is expected to be proportionate to the marginal costs carried by the various member states in meeting their specific targets, including the introduction of criteria such as GDP per capita.[798]

Some writers have argued on the need to stop this redistribution of an overall target among each member state in favour of all member states working towards meeting such a central target to reduce the administrative burdens arising from implementation of the directive.[799] This is more so when some EU member states such as Luxemburg, Malta and Austria have claimed not to have enough natural potential and resources to reach their targets.[800] Klessmann *et al* observed that the allocation of differentiated national targets is based on a flat rate approach adjusted to the member states' GDP which does not necessarily correlate with member states' renewable energy potentials.[801]

Another issue of concern was raised by Correia *et al* who observed that legally binding targets may weigh against other economic, political and/or sustainability priorities such as 'the food vs. fuel' dilemma in the production of biomass for fuel.[802] However, as stated severally in this thesis, the concept of sustainable development involves a careful

[797] http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32009L0028. Accessed on 15 March 2015.
[798] Aviel Verbruggen and Volkmar Lauber, '*Basic Concepts for Designing Renewable Electricity Support Aiming at a Full-scale Transition by 2050*' (2009) 37 Energy Policy 5732-5743 at 5734.
[799] Michael Jefferson, '*Accelerating the Transition to Sustainable Energy Systems*' (2008) 36 Energy Policy 4116 at 4124.
[800] Doerte Fouquet and Thomas B. Johannson, '*European Renewable Energy Policy at Crossroads – Focus on Electricity Support Mechanisms*' (2008) 36 Energy Policy 4079-4092 at 4087.
[801] Corinna Klessmann *et al*., '*Design Options for Cooperation Mechanisms under the New European Renewable Energy Directive*' (2010) 38 Energy Policy 4679-4691.
[802] Fernando Correia *et al*., '*Low Carbon Procurement: An Emerging Agenda*' (2013) 19 Journal of Purchasing and Supply Management 58-64 at 60.

balancing of the socio-economic and environmental factors to arrive at a conclusion favourable to present and future generations. The role of the law here should not involve a disregard of these factors in the evolution of renewable energy technologies. Rather, its role is to ensure that these factors are incorporated at all times as these technologies emerge.

There has been a measure of implementation of the 2009 directive in member states of the EU. In the United Kingdom for instance, in line with Article 22 of the 2009 Renewables Directive, the first progress report for the period 2009-2010 was released. One of the steps taken, as reported, was the introduction of varying rates of support for individual electricity technologies through what is known as 'banding' under the Renewables Obligation.[803] Also introduced was a further increase in the obligation on fossil fuel suppliers to supply a greater percentage of biofuels in road transport under the Renewable Transport Fuels Obligation.[804] Banding allowed the level of support for well-established technologies to be reduced to avoid over-subsidization while ensuring even development of other technologies.[805]

The 2009 Directive also reinforces the need for a trajectory to monitor the progress being made towards meeting individual targets in each member state, with each being obliged to submit an amended National Renewable Energy Action Plan if their share of renewable energy falls below the indicative trajectory.[806] However, the main concern about the renewable energy directive centres around the absence of punitive measures even though target setting has evolved from being indicative to being mandatory and presumably legally binding. Article 27(1) of the directive provides that:

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[803] '*First Progress Report on the Promotion and use of Energy from Renewable Sources for the United Kingdom*' www.gov.uk/government/uploads/system/uploads/attachment_data/file/48264/3992-first-progress-report accessed on 1 April 2014.

[804] Ibid.

[805] DTI (2007), '*Reform of the Renewables Obligation*' http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file39497.pdf accessed on 1 April 2014.

[806] Arnulf Jager-Waldau *et al.*, '*Renewable Electricity in Europe*' (2011) 15 Renewable and Sustainable Energy Reviews 3703-3716 at 3705.

> Without prejudice to Article 4(1), (2) and (3), Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 5 December, 2010

Even though Article 27(2) goes further to state that each member state shall communicate to the Commission the text of the main provisions of national law which they adopt in the field covered by this Directive, there are no provisions in the entire directive which contain punitive measures in a case where a member state fails to comply with the provisions of the directive, even though they are supposed to be legally binding. Klessmann *et al* stated that setting a price for non-compliance with the Directive has been difficult to determine, although they suggested that it may consist of a financial penalty to be set by the European court and a 'moral penalty' arising from being publicly sanctioned by the EU Commission.[807] In fact, the compromise text of the 2009 Renewables Directive rejected a regime of direct penalty mechanisms to be enforced by the European Commission, whereby EU Member States would have faced financial consequences for failing to reach interim targets towards the 2020 goals.[808] It is hoped thst the provisions of Article 256 and 258 of the TFEU will be applied to address this issue.

The 2009 Directive does not also address growth-related barriers that are inimical to the development of renewable energy technologies. Even though there are existing provisions under the EU Third Energy Package (inclusive of the Electricity and Gas Directives), they appear to favour conventional energy sources. For instance, even though the issue of guaranteeing access to the grid for renewable energy sources had been raised as far back as 2001 under the old 2001 Renewable Energy Directive, the Commission still acknowledged years later that member states had not done much on grid management systems in support of green energy sources.[809]

[807] Corinna Klessmann *et al*. (n. 801) at 4681.
[808] Jaroslaw M. Jankowski, '*A European Legal Perspective on Wind Energy*' (2010) 28 J. Energy & Nat. Resources L. 265 at 287.
[809] COM(2005) 627. '*The Support of Electricity from Renewable Energy Sources*'

While Article 16 of the 2009 Directive mandates member states to ensure guaranteed access for renewable energy, and also ensure that standard rules relating to the bearing/sharing of costs are made, there is still a need to incentivize the distribution system operators to encourage them to accommodate energy from green energy sources. This point was highlighted under paragraph 5.4 of Chapter 5 where Joode *et* al observed a lacuna in the law.[810] The Directive does not contain adequate provisions on incentives that could be enjoyed by network transmission operators who have to accommodate green electricity, especially from distributed generation. Although some member states appear to have made provision for this under local laws,[811] the need for uniformity in policy in this area is important to prevent market distortions in the internal energy market. Such incentives may include reimbursements for research and development and compensation for energy lost in transit.

## 8.5 EU Third Energy Package - Electricity Directive (Directive 2009/72/EC)[812]

The EU Third Energy Package takes regional cooperation (discussed later under 8.11) to another level, and may be the power house for the development of renewable energy technologies.[813] This is because it increases competition and increasing competition in the energy sector challenges the dominant positions of the energy monopolies on the European market and allows even the smallest independent producers of renewable energy to have better access to and benefit from the market.[814] The Electricity Directive is part of the EU Third Energy Package.

Since electricity consumption constitutes a large percentage of total energy utilized, the 2009 Electricity Directive (which replaces Directive 2003/54/EC) is worthy of

[810] Joode J. *et al.*, '*Increasing Penetration of Renewable and Distributed Electricity Generation and the need for Different Network Regulation*' (2009) 37 Energy Policy 2907-2915.
[811] Rafael Cossent, Tomas Gomez and Pablo Frias, '*Towards a Future with Large Penetration of Distributed Generation: Is the Current Regulation of Electricity Distribution Ready? Regulatory Recommendations under a European Perspective*' (2009) 37 Energy Policy 1145-1155 at 1152.
[812] http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%A32009L0072. Accessed on 20 August 2015.
[813] Claire Dupont and Radostina Primova, '*Combating Complexity: The Integration of EU Climate and Energy Policies*' (2011) Vol. 15 Special Issue 1 (Article 8) European Integration Online Papers 1 at 10.
[814] Ibid.

examination here as it establishes common rules for the generation, transmission, distribution and supply of electricity, both from conventional and green energy sources. This in effect means that all issues relating to electricity generation from renewable energy sources are covered under the Directive. The Directive is however notable for introducing the principle of proportionality in the authorization procedures for distributed energy generation, allowing member states to promote distributed generation based on renewable energy, waste or Combined Heat and Power.[815]

Under its Article 2(31) 'Distributed Generation' (which is a major hallmark of renewable energy generation) is defined as 'generation plants connected to the distribution system'. Distributed generation has the capacity to provide a viable alternative to network expansion, with the attendant reduction in capital costs. Although this fact was recognized under the old Electricity Directive, there is no provision in the new Directive as to how this suggestion could be implemented and backed up by appropriate regulatory mechanisms.[816] In any case, the Directive is skewed in favour of conventional energy sources in its implementation, although renewable energy sources are covered.

## 8.6 Directive 2010/31/EU on the Energy Performance of Buildings [817](A Recast of Directive 2002/91/EC)

One of the requirements under the Directive is the provision for alternative sources of energy supply like decentralized energy supply systems based on renewable sources for new buildings. The Directive further specified that all new buildings should, by 31 December, 2020, be nearly zero-energy consumption buildings while buildings owned by public authorities should be nearly zero-energy consumption buildings by 31 December, 2018. In its Article 2(2), a 'nearly zero-energy building' was defined as:

[815] H. Lopes Ferreira, '*Distributed Generation and Distribution Market Diversity in Europe*' (2011) 39 Energy Policy 5561-5571 at 5562.
[816] P. Frias *et al*, '*Improvements in Current European Network Regulation to Facilitate the Integration of Distributed Generation*' (2009) 31 Electrical Power and Energy Systems 445-451 at 447.
[817] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:153:0013:0035:EN:PDF. Accessed on 25 August 2015.

> A building that has a very high energy performance, as determined in accordance with Annex I. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby

In its Article 11, the Directive provides for the issuance of an Energy Performance Certificate system to assess the energy performance of buildings. Unfortunately, Article 11(a) also provides for a voluntary common EU certification scheme for the energy performance of non-residential buildings, with states being encouraged to recognize or use the scheme. This again demonstrates the 'soft' nature of the so-called enforcement provisions of EU laws on the environment. 'Non-residential buildings' here may be taken to also include energy intensive manufacturing companies, hospitals and others that utilize a high percentage of conventional energy. The implication of this is that such buildings are not bound to be part of the scheme and need not bother about certification. Furthermore, it has been observed that the Directive does not make provision for targets for renovating existing buildings to make them nearly-zero energy buildings and therefore meet the deadline of 31 December, 2020.[818] The focus has rather been on new buildings which must consume nearly-zero energy by that date, with most of the energy coming from renewable sources.[819]

However, it may be said that the provisions of the 2012 EU Energy Efficiency Directive[820] apply to existing buildings. Under its provisions, EU countries are expected to make energy efficient renovations to at least 3% of buildings owned and occupied by government. Also, EU countries must draw up long-term national building renovation strategies which can be included in their National Energy Efficiency Action Plans.

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[818] European Council for an Energy Efficient Economy (ECEEE) Policy Brief, '*The Energy Performance of Buildings Directive (2010/31/EU)*' (October 2010 at Page 4.

[819] Ibid.

[820] Directive 2012/27/EU. http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1399375464230&uri=CELEX%3A32012L0027. Accessed on 26 August 2015

## 8.7 Support Schemes for Renewable Energy Technologies

There are arguments about whether there should be a harmonized support scheme to encourage investments in renewables as provided under the 2001and 2009 Renewable Energy Directives. But there is as yet no such harmonized scheme in the EU, although there has been rapid development in countries that utilize the feed-in-tariff.[821] The main schemes, now made pursuant to national laws in member states, are examined below.

### 8.7.1 Feed-in-Tariff (FiT)

The FiT establishes a secure contract for wholesale electricity sale at a set price that results in a rate of return attractive to investors and developers.[822] They are guaranteed under several national Feed in Laws such as the Feed-in Tariff (Specified Maximum Capacity and Functions) Order 2010[823] in the United Kingdom. The law prescribes that the payments be passed on to and ultimately borne by consumers according to their electricity consumption.[824] In other words, the tariff payment under the FiT to the renewable power producer is guaranteed over a long period of time (usually 15 to 20 years), which increases security and allows for cost amortization.[825]

The FiT involves a fixed level of support to a power generator per unit of energy produced for a given period. This is where the FiT scheme is market independent. In a market-dependent scheme, renewable energy suppliers provide the electricity they generate to the market at prevailing market rates, with prices rising and falling as demand determines, but with caps and floor on prices. It has been said that the added

[821] David Toke, '*The EU Renewables Directive – What is the Fuss about Trading?*' (2008) 36 Energy Policy 3001-3008.
[822] Steven Ferrey, '*Restructuring Green Grid: Legal Challenges to Accommodate new Renewable Energy* Infrastructure' (2009) 39 Envtl. L 977 at 1007. (Referring to Wilson Rickerson et al. (2007).
[823] http://www.legislation.gov.uk/uksi/2012/2782/memorandum/contents. Accessed on 1 September 2016.
[824] Roland Ismer, '*Mitigating Climate Change through Price Instruments: An Overview of the Legal Issues in a World of Unequal Carbon Prices*' in Christoph Herrmann and Jorg Philipp Terhechte eds., *European Yearbook of International Economic Law* (Springer, 2010) 210 and 211.
[825] David Jacobs, '*Fabulous Feed-in-Tariffs*' (2010) 11(4) Renewable Energy Focus 28-30.

transaction cost of marketing one's electricity on the spot market makes the market-dependent option with its premium price better suited to larger market participants.[826]

Despite the fact that support mechanisms such as the feed-in-tariff and the green certificate (discussed below) have helped spur Europe's clean energy industry, the EU is planning to bring out new rules to subject renewable energy technologies to market-based mechanisms by 2017.[827] Ironically, a significant part of the conventional energy infrastructure is earmarked for protection through subsidies.[828] The effectiveness of the new rules will be determined in the next few years. But it may be argued that there is no basis for withdrawing support for renewables when conventional energy sources (protected by powerful lobbyists) will continue to enjoy a measure of support.

### 8.7.2 Green Certificates

Green certificates are incentives for the production of electricity from renewable energy sources.[829] Electricity suppliers are expected to generate a given amount of electricity from renewable energy sources, an act which is demonstrated by the possession of a green certificate, tradable and can be bought from other suppliers. In other words, a member state obliges electricity generators or distributors to either generate or purchase a given quota of electricity from green energy sources. These quotas are however tradable, giving each producer the option to either fulfil the quota or buy quotas in the form of certificates from those that have exceeded their quotas and therefore have excess certificates to trade.

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[826] Toby Couture and Yues Gagnon, '*An Analysis of Feed-in-Tariff Remuneration Model: Implications for Renewable Energy Investment*' (2010) 38 Energy Policy 955-965 at 956.

[827] Arthur Neslen, '*Commission Pushes Renewable Energy into the Free Market*' (April 10, 2014 – Updated on January 8, 2015). EurActive.com. Available at euractive.com/section/energy/news/commission-pushes-renewable-energy-into-the-free-market. Accessed on 30 April, 2016.

[828] Ibid.

[829] Gestore Mercati Energetici, '*About Green certificates*' <mercatoelettrico.org/en/mercati/cv/CosaSonoCv.aspx. assessesed on 25 January 2016.

It has been stated that tradable certificates lead to economic efficiency as it means that green electricity is produced by those generators that can do so at the least cost.[830] It must however be stated that, although the green certificate system relies heavily on market mechanisms, it needs the backing of the law to be implemented. In the United Kingdom for instance, it has largely been implemented through the Renewables Obligation (RO) under which Renewable Obligation Certificates are issues to green energy producers.

But the green certificates allow for complacency as a supplier under obligation can afford to buy such certificates from other sources while it continues to consume energy from conventional energy sources as long as it meets its carbon emission reduction targets. This once again highlights the negative influence climate change considerations have on the evolution of the laws on renewable energy technologies and the need for a separate legal framework dedicated to such technologies. Although Article 3(3)(a) of the 2009 Renewables Directive provides for support schemes for these technologies, which might as well cover green certificates, it may be argued that the provision for guarantees of origin under Article 15 of the Directive creates a stringent condition on the need to prove the actual green source of energy generation. However, the last paragraph of Article 15(2) provides that the guarantee of origin shall have no function in terms of a Member State's compliance with its targets under Article 3, and subsequently its transfer between Member States is of no effect.

Since the guarantee of origin is a form of green certificate, it may be inferred that the 2009 Renewables Directive does not expressly support the transfer of green certificates between countries in meeting their targets. Rather, the Directive provides in its Article 6 for statistical transfers of energy between member states, under which a state can buy and sell excess renewable credits to another state. However, Article 15(8) of the Directive makes such certificates transferrable between an electricity supplier and a third party. It provides that:

[830] Marc Ringel, '*Fostering the use of Renewable Energies in the European Union: The Race between Feed-in-Tariffs and Green Certificates*' (2006) 31 Renewable Energy 1-17 at 8.

> The amount of energy from renewable sources corresponding to guarantees of origin transferred by an electricity supplier to a third party shall be deducted from the share of energy from renewable sources in its energy mix for the purposes of Article 3(6) of Directive 2003/54/EC (now Directive 2009/72/EC – the Electricity Directive).

By way of explanation, Article 3(6) of that Directive mandates electricity suppliers to give information about the mix of energy sources in their bills to final consumers. It can be said that, while the Renewables Directive appears not to be keen on trading certificates between Member States, such certificates can be transferred between electricity suppliers and third parties. Since Member States depend on electricity producers, suppliers and consumers to meet their targets under the Directive, the issue of complacency mentioned above becomes pertinent as the mere transfer of certificates without actual reduction in conventional energy consumption defeats the purpose behind investments in renewable energy technologies as stated in this research. If anything, it may be a proof that the main purpose of the directive is carbon emission reduction.

### 8.7.3 Need for Harmonization of Support Schemes

The need to avoid market distortions can be extended to the support mechanisms for renewable energy technologies. Tyler and a host of other researchers have argued for a harmonized support scheme for renewable energy technologies within the EU and criticized the 2009 Renewables Directive for the lack of a provision for mandatory, harmonized support scheme which harms renewable energy interests.[831] He stated that only the legislative certainty that comes with a mandatory integrated and interconnected support scheme will give investors the confidence needed to provide capital to renewable energy projects. He further stated that the EU's continued failure to endorse a unified scheme means that individual countries will continue to develop disparate

[831] Hagenbuch Tyler, '*Establishing an Aggressive Legal Framework for the Future of Wind Energy in Europe*' (2009) 42 Vand. J. Transnat'l L. 1595 at 1620.

plans, with variations between schemes becoming more difficult to reconcile and reducing the incentives of developing renewable energy in two or more countries with variations in their support schemes.

It is difficult to see how a lack of harmonized support schemes will cause severe market distortions. The court has ruled in *Preussenelektra AG v. Schleswag AG*[832] that measures put in place to support development of renewable energy technologies do not conflict with EU competition laws as long as they are proportionate and least intrusive to the fundamental principles of free trade. Arguments for and against harmonization are yet inconclusive. In other words, it has not been firmly established that different support schemes cause distortions in the market. However it is pertinent to refer to the case of *Alands Vindkraft v. Energimyndigheten*[833] (discussed under 5.3 of chapter five). The case appears to support harmonization of support schemes. It was argued that, if there are different support schemes among member states, green energy producers in a particular member state may be tempted to establish renewable energy projects in its border towns and cities to supply such produced energy to a neighbouring country with more favourable support schemes. As such, the country of production may lose out on its green energy production targets.

## 8.8 Planning Laws

The planning system had hitherto been hostile to the development of renewable energy technologies.[834] Lengthy and time-consuming application processes can lead to regulatory uncertainty, creating a disincentive to investors. In view of the problem of delays caused by the planning application process, the EU Commission, acting under powers granted by the Lisbon Treaty to create a European Energy Policy, proposed a new method of prioritizing infrastructure of high importance to the EU as a whole – a one-stop shop in each member state for the decision on, or at last the coordination of,

[832] Case C-379/98. (Court of Justice of the European Communities).
[833] C-573/12 (03/07/2014).
[834] Gordon Walker and Malcolm Eames, '*Environmental Inequalities: Reflections on a Transdisciplinary Seminar Series*' (2008) 13(8) Local Government 663-667.

the permitting procedure, and a maximum of three years for permitting decisions on these priority projects.[835] While there may appear to be a conflict between this move by the EU and its other directives such as the Habitats Directive and Birds Directive, which put environmental protection in the forefront during planning applications, the environmental impact assessment requirements of planning law ensure that environmental considerations are well taken care of. In any case, projects which are deemed to be of overriding public interest are an exception to the general rule and for which environmental considerations may be waived. As such, if a renewable energy project is deemed to be of overriding public interest, it may enjoy a fast-track planning application process.[836]

On 14 October, 2013, the EU Commission adopted a list of key energy infrastructure projects which are deemed to be 'projects of common interests.' They will benefit from faster and more efficient granting procedures and improved regulatory treatment if they are deemed to have significant benefits for at least two member states, contribute to market integration and further competition, enhance security of supply and reduce carbon emissions.[837] It is hoped that renewable energy projects will benefit from this initiative. However, in a list of projects of common interests updated on 9th January, 2014, majority of the projects on the list are conventional energy projects, with the few renewable energy-related projects restricted to hydro-pumped storage facilities in parts of Austria.[838] The list of projects of common interests is updated every two years while a revised list was expected at the end of October, 2015.[839] That list, adopted on

[835] David Buchan, '*Expanding the European Dimension in Energy Policy: The Commission's Latest Initiatives*' (2011) The Oxford Institute for Energy Studies 11 http://www.oxfordenergy.org/wpcms/wp-content/uploads/2011/10/SP_23.pdf accessed on 2 April 2014.

[836] '*Wind Energy Developments and Natura 2000*' Guidance Document. European Commission (2010) 25 http://ec.europa.eu/environment/nature/natura2000/management/docs/wind_farm.pdf accessed on 2 April 2014.

[837] http://ec.europa.eu/energy/infrastructure/pci/pci_en.htm accessed on 2 April 2014.

[838] Projects of Common Interest – European Commission. http://ec.europa.eu/energy/sites/ener/.../2013_pci_projects_country_0.pdf accessed on 30 June 2015.

[839] Norton Rose Fulbright, '*European Energy Infrastructure Opportunities: Projects of Common Interest*' (September 2014) 2nd Edition. Available at nortonrosefulbright.com/knowledge/publications/120068/European-energy-infrastructure-opportunities-projects-of-common-interest. Accessed on 2 August, 2015.

November 18, 2015, is mostly dedicated to transmission and inter-connectivity energy infrastructure.[840]

## 8.9 EU Emissions Trading Scheme (EU-ETS)

The EU-ETS came into force in 2005 as a European scheme for trading in carbon emission allowances. It covers European producers in four major sectors, including the energy sector (e.g. electric power and oil refinement).[841] Although its primary aim was rooted in climate change concerns, it has had a positive impact on the development of renewable energy technologies. In fact, Lawson believes that the primary aim of the target to lift the share of renewable energy in gross final energy consumption to 20% by 2020, as agreed in the EU Climate and Energy Package, was to complement the EU ETS in reducing emissions and to improve energy security.[842] After its introduction, those enterprises with limited carbon emission credits had two options: one was to put a large sum of funds to upgrade energy technology so as to realize $CO_2$ emissions reduction (including investments in low carbon renewable technologies); the other was to buy emission allowances from the carbon trading market.[843]

There were concerns that its implementation would put EU energy-intensive companies at a competitive disadvantage when compared with non-European companies that were not bound by its provisions. A large number of supporting measures were proposed by stakeholders to mitigate against this, including the provision of subsidies for environmentally-friendly technologies such as renewable energy technologies to enable such companies to generate energy from green sources. These support measures must however meet certain basic criteria including the fact that they must guarantee full

[840] The Union List of Projects of Common Interest, Brussels 18.11.2015, C(2015) 8052 final. <ec.europa.eu/energy/sites/ener/files/documents/5_2%20PCI%20annex.pdf> accessed on 25 January, 2016.
[841] Niels Anger and Ulrich Oberndorfer, '*Firm Performance and Employment in the EU Emissions Trading Scheme: An Empirical Assessment for Germany*' (2008) 36 Energy Policy 12-22.
[842] Jeremy Lawson, '*European Energy Policy and the Transition to a Low-Carbon Economy*' (2010) OECD Economics Department Working Papers No. 779 at p. 25.
[843] Yue-Jun Zhang and Yi-Ming Wei, '*An Overview of Current Research on EU-ETS: Evidence from its Operating Mechanism and Economic Effect*' (2010) 87 Applied Energy 1804-1814 at 1810.

environmental effectiveness in accordance with the legally binding climate change commitments of the EU, and they must not seriously harm other socio-economic interests of the EU, including its trade relations with non-EU partner nations.[844] Subsidies introduced under programmes such as the feed-in-tariff are relevant here, although the issue of market distortion is still subject to debate.

Kara *et* al believe that energy price rises associated with compliance with the EU-ETS have been somewhat reduced, and one key reason for this can be traced to the investments in new power generation capacity with low carbon sources which equally reduce the need for purchasing emissions allowances in the first place.[845] This may then address the issue raised by Maria Blanco *et al* who argued that the level of $CO_2$ prices under the scheme was not high enough to constitute an optimal approach to foster green energy development from the economic and social point of view.[846] This however does not remove the fact that a strong $CO_2$ price could indeed become an additional incentive for the deployment of renewable energies, provided a number of other flaws inherent in the Directive were addressed.[847]

A new EU-ETS regime came into force to cover the period 2013-2020 by virtue of Directive 2009/29/EC. [848]The directive has been designed to enhance companies' incentives to invest in low carbon technologies of which renewable energy is one.[849] For instance, Article 17 of the recital recognizes the need for all member states to make substantial investments to reduce the carbon intensity of their economies by 2020 in the transformation of the community economy towards a safe and sustainable low carbon

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[844] Harro Van Asselt and Frank Biermann, '*European Emissions Trading and the International Competitiveness of Energy-Intensive Industries: A Legal and Political Evaluation of Possible Supporting Measures*' (2007) 35 Energy Policy 497-506 at 498.

[845] M. Kara *et al*., '*The Impacts of EU $Co_2$ Emissions Trading on Electricity Markets and Electricity Consumers in Finland*' (2008) 30 Energy Economics 193-211 at 204.

[846] Maria Isabel Blanco and Gloria Rodrigues, '*Can the Future EU-ETS Support Wind Energy Investments?*' (2008) 36 Energy Policy 1509-1520 at 1512.

[847] Ibid.

[848] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0063:0087:en:PDF. Accessed on 2 September 2015.

[849] Jon Birger Skjoerseth and Jorgen Wettestad, '*The EU Emissions Trading System Revised (Directive 2009/29/EC)*' in Sebastian Oberthur and Marc Pallemaerts (eds.), *The New Climate Policies of the European Union: Internal Legislation and Climate Diplomacy* (Vubpress Brussels University Press, 2010) 66.

economy.[850] Furthermore, Article 18 of the same preamble recognizes the need to use at least 50% of the proceeds from the auctioning of allowances to fund research and development into renewable energies to meet the EU's commitment to using 20% of renewable energies by 2020.

The new EU-ETS regime is heavily influenced by climate change considerations. Hu *et al* observed that the targets set for carbon emission reduction need to be more stringent to bolster confidence in the carbon market and thereby ensure a stable environment for low carbon technologies (including renewable energy technologies) which are essential for decarbonization.[851] Even though a high carbon price should create an incentive for investments in renewable nergy technologies, carbon prices appear to be too low to incentivize investors.[852] Such investors may rather prefer a regime of subsidies or state aid to set carbon prices. There are however debates as to the effectiveness of carbon emission reduction prices as compared with subsidies for renewable energy projects which will be looked at below (8.12). The issue in summary is that carbon prices set under the EU-ETS are only suitable for carbon emission reduction only while renewable energy projects will benefit more from subsidies. However, because of climate change considerations (which have overshadowed energy security issues in the directive), carbon allowances have been focused on to the detriment of renewable energy technologies.

## 8.10 Energy Charter Treaty

The Energy Charter Treaty (ECT) was signed in 1994 and came into force in 1998, and was ratified by several states, mainly countries within the EU and the former Soviet

[850] Directive 2009/29/EC (amending Directive 2003/87/EC) http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0063:0087:en:pdf accessed on 02 April 2014.
[851] Jing Hu *et al., 'Ex-ante Evaluation of EU ETS During 2013-2030: EU Internal Abatement*' (2015) 77 Energy Policy 152-163.
[852] Meredith Fowlie, 'Why are Carbon Prices so Low?' (July 05, 2016). Available at http://www.env-econ.net/2016/07/why-are-carbon-prices-so-low.html. Accessed on 21 October, 2016.

Union, including the EU as a regional block.[853] Article 2 of the treaty states its purpose, which is to establish a legal framework for long term cooperation in the field of energy, based on complementarities and mutual benefits. A brief discussion on the ECT is apt at this point. This is because it is the only international treaty on energy trade and investment protection. The ECT has the potential to go a long way in ensuring cooperation within EU countries on energy matters, at least, but when one looks at salient sections of the treaty which cover sustainable energy technologies, it can be said that they are drafted in non-binding language which may make them unenforceable. For instance, Article 19 of the treaty which deals with ensuring sustainable development through sustainable energy sources uses the words 'shall strive', which presupposes that the contracting parties are not bound to ensure sustainability in energy consumption.

Bradbrook, in his view, believes the ECT is essentially devoid of provisions dedicated to the legal enforcement of renewable energy technologies development as they are merely considered to be part of the sources of energy.[854] Walde on his part criticized the ECT for carefully avoiding any legally binding environmental obligation.[855] The treaty is more focused on securing sources of energy generally, and they may as well be conventional energy sources. Furthermore, the new International Energy Charter of 2015 is a mere declaration of political intention aimed at strengthening energy cooperation between signatory states and contains no legally binding obligations. [856]

[853] Edna Sussman, '*The Energy Charter Treaty's Investor Protection Provisions: Potential to Foster Solutions to Global Warming and Promote Sustainable Development*' (2008) Vol. 14:2 ILSA Journal of International and Comparative Law 391-404.

[854] Adrian Bradbrook, '*The Development of Renewable Energy Technologies and Energy Efficiency Measures through Public International Law*' in Donald N. Zllman *et al* (eds.) *Beyond the Carbon Economy: Energy Law in Transition* (Oxford University Press, 2008) 109 at 117-118.

[855] Thomas W. Walde, '*Sustainable Development and the 1994 Energy Charter Treaty: Between Pseudo-Action and the Management of Environmental Investment Risk*' in Friedl Weiss, Erik Denters and Paul de Waart (eds), *International Economic Law with a Human Face* (Kluwer Law International, 1998) 223.

[856] The International Energy Charter (2015) <energycharter.org/process/international-energy-charter-2015> accessed on 18 December 2015.

## 8.11 Regional Cooperation

The targets in the 2009 Renewables Directive were established on the basis of effort sharing among member states.[857] It has been stated that, if each member state relies on its own efforts, then by 2020, each state would have only been able to achieve between 35%-50% of its renewable energy targets even if it follows the path laid down in its Action Plan.[858] The 2009 Renewables Directive therefore makes provisions for joint projects. Article 6 on statistical transfers, Article 8 on joint projects and Article 10 on joint support schemes all pertain to issues dealing with cross-border cooperation on green energy projects and targets. Cooperation activities are therefore very vital in the development of renewable energy technologies and the meeting of national and EU regional targets as a whole. This is especially within the context of the EU Third Energy Package under which these cross-border initiatives are guaranteed legal protection. Articles 9 and 10 of the Directive also provide for cooperation with non-EU member states to enable such member states meet their targets. A very good example of ongoing cooperation is Italy which imports renewable energy from Serbia and therefore covers part of its renewable production targets with that imported electricity.[859]

Jan Steinbach *et al* pointed out the immense benefits derivable from the cooperation between member states under a harmonized policy framework provided by the EU, one of which is the fact that a more coordinated and harmonized policy framework is able to address the main barriers to expansion of these technologies more economically and effectively than an uncoordinated policy at member state level.[860] Some other benefits include the minimization of generation costs by investments where it is most profitable (i.e. in a technology in which a member state has a comparative advantage), the

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[857] Philip Lowe, '*Regulating Renewable Energy in the European Union*' (2010) Renewable Energy L. & Pol'y Rev. 17 at 20.

[858] L.W.M. Beurskens, M. Hekkenberg and P.Vethman, '*Renewable Energy Projections as Published in the National Renewable Energy Action Plans of the European Member States*' (2011) Energy Research Centre of the Netherlands/European Environment Agency 30. Available at http://www.ecn.nl/docs/library/report/2010/e10069.pdf. Accessed on 14 September 2014.

[859] Lena kitzing, Catherine Mitchell and Poul Eric Morthorst, '*Renewable Energy Policies in Europe: Converging or Diverging?*' (2012) 51 Energy Policy 192-201 at 199.

[860] Jan Steinbach *et al*., '*Analysis of Harmonisation Options for Renewable Heating Support Policies in the European Union*' (2013) 59 Energy Policy 59-70 at 61.

minimization of transaction costs and the avoidance of market distortions.[861] All of these points raised provide further justification for EU-level energy policy as opposed to individual policies at the level of member states (an issue raised in Chapter One which explains the reason for focusing on energy legal framework at the regional level). These cooperation mechanisms may be a solution to the concerns raised by Klessmann *et al* on the need to tie national targets to renewable energy potentials and not to GDP.[862]

Most of these cooperation mechanisms will involve mutually binding legal agreements entered into by member states for which the Directive does not provide general guidelines. Such commercial agreements will cover issues like indemnities and liabilities for failure or lateness on the part of a Member State in fulfilling its own part of the agreement, for instance, a failure to make statistical transfers as agreed. An exporting country that fails to ensure a transfer to an importing country should bear the cost of failure to comply with the Renewables Directive on this issue. Torriti *et al* have however pointed out that, while EU Parliament and Council Directives on the internal market may lead to liberalization of the energy market, they have only laid down the general conditions required for the creation of a single internal energy market in the EU. No single market model has been specified, and Member States are free to design the laws governing their local markets in a way to suit local circumstances as long as the broader objectives of the internal energy market are upheld.[863]

## 8.12 Are Existing Laws under the Shadow of Climate Change Considerations?

Because of the intricate connections between climate change and other issue areas, one may observe a number of interrelationships between international climate change treaties and other international legal regimes.[864] Most of the policies and laws on renewable energy technologies that have so far been examined have climate change

[861] ibid
[862] n. 801.
[863] Jacopo Torriti, Mohamed G. Hassan and Matthew Leach, '*Demand Response Experience in Europe: Policies, Programmes and Implementation*' (2010) Energy 1575-1583
[864] Harro Van Aselt, Francesco Sindico and Michael A. Mehling, '*Global Climate Change and the Fragmentation of International Law*' (2008) Vol. 30 Issue 4, Law and Policy 423-449.

concerns at heart and may appear to have been uncoordinated. For instance, the Renewables Directive is still being viewed as part of the package of measures needed to reduce greenhouse gas emissions and comply with the Kyoto Protocol.[865] In fact, Lean *et al* stated that the Kyoto Protocol on Climate Change was the catalyst for countries setting targets for increasing renewable energy in the energy mix.[866] Even though scholars like Farquhar have argued that the solutions to energy security and climate change challenges are largely the same and overlap, creating economic returns and benefits in the same way,[867] the controversies and uncertainties bedeviling climate change matters have made it necessary to have laws dedicated to renewable energy technologies.

The provisions of the United Nations Framework Convention on Climate Change (UNFCCCC),[868] especially Article 4(1)(c ) and the Kyoto Protocol[869] on cooperation in the area of development of technologies needed to combat climate change appear to be vague on the specific types of technologies needed for the task. There is a tendency for parties to utilize such provisions to invest in nuclear energy with its attendant environmental hazards as long as carbon emission reduction targets are met. Also, the Clean Development Mechanism (CDM) gives developed countries flexibility in achieving their emission targets as companies in such countries can invest in projects in developing countries, receiving emissions saved due to their involvement s emission permits.[870] The danger here is that such companies, due to purely climate change considerations, may continue to devote their time to investments in sustainable energy projects in developing countries while neglecting the need for such technologies in their own countries for energy security purposes.

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[865] Carolyn Fischer and Louis Preonas, '*Combining Policies for Renewable Energy: Is the Whole Less than the Sum of its Parts?*' (2010) 4 International Review of Environmental and Resource Economics 51-92 at 55.

[866] Hooi Hooi Lean and Russel Smyth, '*Will Policies to Promote Renewable Electricity Generation be Effective? Evidence from Panel Stationarity and Unit Root Tests for 115 Countries*' (2013) 22 Renewable and Sustainable Energy Reviews 371-379.

[867] Ned Farquhar, '*Energy Security: Climate: Converging Solutions*' (2009) 29 J. Land Resources & Envtl. L. 1 at 15

[868] 1771 UNTS 107. Available at https://unfccc.int/resource/docs/convkp/conveng.pdf. Accessed on 28 September 2015.

[869] 2303 UNTS 148; (2008) ATS 2. Available at http://unfccc.int/kyoto-protocol/items/2830.php. Accessed on 28 September 2015.

[870] Philipp Hieronymi and David Schuller, 'The *Clean Development Mechanism, Stochastic permit Prices and Energy Investments*' (2015) 47 Energy Economics 25-36 at 27.

Furthermore, Wiseman *et al* observed that the climate change laws have failed to provide a comprehensive framework for ensuring that these low carbon renewable energy technologies balance economic, social and environmental factors, with their overall focus on the environment.[871] Such one-sided laws were analyzed by Outka who stated that they had a reactive regulatory structure inevitably leading to consistent and pervasive neglect of cumulative impacts.[872] Laws and policies on development of renewable energy technologies and based on the concept of sustainable development will consider environmental, economic and social factors in their formulation.

Some scholars have argued that renewable energy has largely been ignored under climate change laws.[873] Other scholars however see it from another angle. For instance, Howes, in his analysis of the 2009 Renewables Directive, insisted that the EU had an explicit renewable energy policy distinct from its climate policy since the launch of the 1997 White Paper, 'Energy for the Future.'[874] He therefore prefers to see EU climate change policy as a direct result of the drive towards energy security utililizing renewable energy technologies. While it is conceded that there is a close link between EU low carbon energy security policy and climate change policy (leading to arguments in favour of integration considered below), the 2009 Renewables Directive should not only be viewed as a tool of carbon emission reduction.[875] Rather, it should also be viewed as a major tool for achieving energy security through investments in such technologies.

One possible result of basing any law on renewable energy technologies on energy security considerations (rather than considerations of climate change) is that the problems of social acceptance (discussed in Chapter Seven) may be virtually eliminated. Opposition to these technologies stems largely from the uncertainties surrounding the effects of climate change. There may be no such uncertainties surrounding energy security issues as conventional energy reserves are being severely

[871] Hannah Wiseman *et al*, '*Formulating a Law of Sustainable Energy: The Renewables Component*' (2010-2011) 28 Pace Envtl. L. Rev. 827 at 829.
[872] Uma Outka, '*The Renewable Energy Footprint*' (2011) 30 Stanford Envtl. L.J. 36.
[873] Steven Ferrey, '*The Failure of International Global Warming Regulation to Promote Needed Renewable Energy*' (2010) 37 Boston College Environmental Affairs Law Review 67.
[874] Tom Howes, '*The EU's New Renewable Energy Directive (2009/28/EC)*' in Sebastian Oberthur and Marc Pallemaerts (eds.), (n. 796) at 117.
[875] See Carolyn Fischer and Louis Preonas (n. 865).

depleted. It is this social acceptance that engenders the normative force of these renewable energy technologies, assisted by the eventual normative force of the law. In other words, if norms are described as the actual constraints placed on human actions, inviting or enforcing, inhibiting or prohibiting specific types of behaviours,[876] then the need to ensure energy security for present and future generations enables these technologies to have a normative force which alters human behavior, aided by the force of the law. The alteration in human behavior is exemplified through a preference for energy from green energy sources and adjustments made to accommodate them in the socio-economic spheres of life.

It has also been argued that, in a world whose one and only worry is about mitigation of greenhouse gas emissions, there is no need for renewable energy support schemes as the principles underlining the two policy objectives are different.[877] As such, when renewable energy technologies are developed to meet carbon emission reduction targets, they should not be aided by support schemes, as such schemes impair the cost-effectiveness of carbon emission reduction targets which may be market-based as is the case under the EU-ETS. [878]The need for a shift in the perception of renewable energy technologies from being solely tools of carbon emission reduction to being tools of global energy security is already being emphasized.[879] Climate change considerations have been overshadowed by the politics of fear around the loss of competitiveness associated with carbon reduction commitments.[880] This narrow and static understanding of competitiveness fails to take into account the dynamic nature of technological change which will, in the long run, foster socio-economic and environmental development.[881]

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[876] Mireille Hildebrandt, '*Legal and Technological Normativity: More (and less) than Twin Sisters*' (2008) 12:3 Techne: Research in Philosophy and Technology http://works.bepress.com/mireille_hildebrandt/13 Assessed on 2 April 2014.

[877] Paul Lehmann and Erik Gawel, '*Why Should Support Schemes for Renewable Electricity Complement the EU Emissions Trading Scheme?*' (2013) 52 Energy Policy 597-607.

[878] Ibid.

[879] Patrick Moriarty and Damon Honnery, '*What is the Global Potential for Renewable Energy?*' (2012) 16 Renewable and Sustainable Energy Reviews 244-252.

[880] Bernice Lee, '*Managing the Interlocking Climate and Resource Challenges*' (2009) 85(6) International Affairs 1101 at 1111.

[881] Ibid.

The Business Council of Australia had argued that climate change mitigation laws will obviate the need for separate laws dedicated to next generation energy technologies as such technologies will automatically be promoted by climate change laws.[882] However, legislations that have evolved due to climate change considerations have only assisted these technologies from taking off. The current climate change legal regime is full of inconsistencies, fragmented and riddled with 'soft law'. There is still considerable uncertainty among governments and regulatory agencies about the kind of policy framework needed to manage the incorporation of these technologies into the larger generation mix of the EU, with support mechanisms, for instance, colliding with existing economic and industrial policies much more frequently.[883] Therefore, a serious commitment to the widespread adoption of low carbon next generation technologies requires a more comprehensive legislative framework rather than relying on a tangential spin-off effect from other forms of legislation or policies.[884] In other words, there is a need for a fully separate legal regime for renewable based on energy security concerns due to the misalignment between climate change and energy security objectives under the existing framework. More importantly, removing renewable energy technologies from the realm of climate change through separate laws solely devoted to them will remove the "public good characteristics" associated with these technologies ( rooted in the need to reduce carbon emissions) which discourages investors from investing in them in preference for goods that will bring immediate profits to them.[885] Research and development on these technologies go beyond the public good which is the reduction of carbon emissions in view of climate change challenges. It has become imperative to develop them to ensure energy security.

The climate change regime comes with a lot of complexities that should not be allowed to affect the development of renewable energy technologies. Bulkeley and Newell

[882] Paul Kelly, '*Renewable Energy Target Initiative is Mad, Bad Tokenism*' (2009) The Australian http://www.theaustralian.com.au/news/opinion/renewable-energy-target-initiative-is-mad-bad-tokenism/story-e6frg620-1225763632586 accessed on 2 April 2014.

[883] C. Batlle, I.J. Perez-Arriaga and P. Zambrano-Barragan, '*Regulatory Design for RES-E Support Mechanism: Learning Curves, Market Structure and Burden-Sharing*' (2012) 41 Energy Policy 212-220.

[884] Adrian J. Bradbrook, '*Creating Law for Next Generation Technologies*' (2011) 2 Geo. Wash. J. Energy & Envtl. L. 17 at 19.

[885] Margaret R. Taylor, Edward S. Rubin and David A. Hounshell, '*Regulation as the Mother of Innovation: The Case of $SO_2$ Control*' (2005) 27 Law and Policy 348.

observed that the complexity of governing climate change (governing here being enforcement) stems from three related factors: the multiple scales of political decision-making involved; the fragmented and blurred rules of state and non-state actors; and the deeply embedded nature of the processes that lead to emissions of greenhouse gasses in everyday processes of production and consumption.[886] In addition, Haug *et al* gave a succinct summary of the dilemma of relying on laws routed in climate change:[887]

> Three further themes relating to implementation and reinforcement emerge from the meta-analysis: loopholes in the design of some instruments; poor provisions made for monitoring; and the weakness or indeed lack of reinforcement mechanisms for many policies. Starting with the first of these, many evaluations demonstrate that policy instruments that were initially designed with some degree of ambition are watered down before their implementation

There are arguments for a coordinated/integrated approach to planning a comprehensive legal management regime to support newly emerging energy technologies and to ensure that such a regime is consistent with and supportive of sustainable energy development.[888] Johnson has argued for an integrated approach. He said that, in looking at energy issues from the angle of climate change, the EU has given high priority to the latter by applying climate-based screening criteria rather than including climate change in an integrated energy-climate-development approach[889]. It is this approach that has influenced the negative perception of most renewable energy technologies by the public especially on environmental matters. Macedo pointed out the example of Brazil's approach which may be of benefit to the EU. He said that the development of Brazil's biofuels industry was based on policy goals of energy security,

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[886] Harriet Bulkeley and Peter Newell, '*Governing Climate Change*' (Routledge, 2010).

[887] Constanza Haug *et al*, '*Navigating the Dilemmas of Climate Policy in Europe: Evidence from Policy Evaluation Studies*' (2010) 101 Climatic Change 427-445 at 438.

[888] Adrian J. Bradbrook (n. 884).

[889] Francis X. Johnson, '*Regional-Global Linkages in the Energy-Climate-Development Policy Nexus: The Case of Biofuels in the EU Renewable Energy Directive*' (2011) Renewable Energy L. & Pol'y 91 at 105.

import substitution and economic development; with climate and environmental considerations being secondary considerations.[890]

Also, this integrated approach seems to be favoured by the United States for instance where the goal of the law is to "create clean energy jobs, achieve energy independence, reduce global warming and transition to a clean energy economy."[891] There are however a number of practical challenges that an integrated approach might face. One of them was identified by Agnolucci who stated that there might be a dilemma in government policies where the price of a tonne of $CO_2$ on the carbon market is, say, £10 (under a carbon emission reduction programme) while the cutting of a tonne of $CO_2$ through the adoption of renewable electricity costs, say, treble that amount enjoyed as subsidies (under energy security targets).[892] According to him, such a high economic incentive paid to green energy generators may be justified based on the fact that, in practical terms, renewable electricity is unlikely to be a success if funded exclusively by a low carbon climate change-related price, such as that derived from a carbon tax. There is therefore a conflict between climate change targets and those of energy security. The combination of energy policy with climate change policy objectives, which has led to a suite of policy measures such as the 20/20/20 energy and climate package, has been criticized for leading to a contradiction between climate policies and internal energy market initiatives.[893] This may endanger the competitiveness of the EU economy.[894]

Article 194 of the Treaty on the Functioning of the European Union seems to tilt towards the integrated approach by basing internal energy market, energy efficiency and renewable energy matters on "the need to preserve and improve the environment". There is a tendency to link environmental protection with climate change and

[890] Isaias de Carvalho Macedo, '*Sugar Cane's Energy: Twelve Studies on Sugar Cane Agribusiness and its Sustainability*' (Sao Paoloi UNICA, 2005) http://sugarcane.org/resource-library/books/sugar%20Canes%20Energy%20-%20Full%20books.pdf accessed on 15 April 2014.
[891] American Clean Energy and Security Act.
[892] Paolo Agnolucci, '*Factors Influencing the Likelihood of Regulatory Changes in Renewable Electricity Policies*' (2008) 12 Renewable and Sustainable Energy Reviews 141-161 at 147.
[893] M. Kanellakis, G. Martinopoulos and T. Zachariadis, '*European Energy Policy – A Review*' (2013) 62 Energy Policy 1020-1030 at 1029. Referring to R. Tol (2012) and Helm.
[894] Ibid.

environmental pollution associated with the production and consumption of conventional energy sources. While both climate change and energy security issues may therefore be grounded in environmental considerations, the trajectory of the journey towards sustainability so far has meant that climate change considerations have overtaken energy security issues in the implementation of environmental protection laws in the EU. This is one of the main reasons behind the opposition to alternative energy sources within the EU purely on environmental grounds as examined under Chapter Six.

Climate change considerations under the integrated approach do not fully allow for the consideration of social and economic factors which need to also be considered to allow for all round sustainable development. For instance, the Shieldaig and Slatterdale hydro-electric scheme in Scotland was not approved, largely because its construction would run foul of EU laws – the Habitats, Birds and Water Framework Directives – which focus more on environmental considerations over and above economic and social development considerations.[895]

Also, there may be a need to separate laws on green energy from those on conventional energy to give them a distinct identity. For instance, in spite of the FiT and Green Certificate Scheme which have been backed by law, there is currently a lack of a legal framework for independent power producers as conventional power utilities still enjoy a monopoly on electricity generation and distribution in most member states.[896] In other words, existing legal instruments on energy in the EU operate mostly with conventional energy sources in mind, with renewable energy sources operating in the shadows. This is in spite of the provisions of Directive 2010/31/EU examined under paragraph 8.6 above which focuses on energy performance of buildings). For instance, Mendonca observed that, in the absence of a dedicated legal framework, independent power producers (who are in most cases renewable energy generators) may not be able to invest in renewable energy facilities and sell power to the established conventional energy utilities, as even so-called power purchase agreements make it difficult for renewable energy project developers to plan and finance projects on the

[895] Aylwin Pillai, Collin T. Reid and Andrew R. Black, '*Reconciling Renewable Energy and the Local Impacts of Hydro-Electric Development*' (2005) 7(2) Environmental Law Review 110-123.
[896] Miguel Mendonca, '*Feed-in-Tariffs: Accelerating the Deployment of Renewable Energy*' (Earthscan, 2007) 5.

basis of known and consistent rules.[897] A separate legal regime for renewable energy technologies, distinct from the legal regime dedicated to conventional energy technologies, has become imperative.

## 8.13 Other Defects of Existing Laws

Batlle *et al* highlighted some of the defects of existing law with regards to renewable energy technologies, stating that the regulatory learning process has not been so pronounced, with a large number of crucial regulatory questions waiting for a proper response.[898] For instance, the FiT laws of Member States impose a tariff payable to the green power generator for a fixed period. This tariff does not have the input of other stakeholders such as the Transmission System Operators. In countries like Germany, there has been a resort to commercial agreements (similar to those mentioned earlier under paragraph 8.11 - Regional Cooperation) which capture all the parties needed to be part of the process.[899] However, as mentioned earlier under the same paragraph 8.11, guidelines under EU laws will be needed to aid in the drafting of these commercial agreements to prevent market distortions.

On the nature of the laws (and as earlier mentioned in Chapter One), some of the laws, especially the ones on climate change, are soft laws. It is hoped that the 2015 Paris Agreement on Climate Change will bring about more purposeful efforts in the drive towards renewable energy technologies. Soft laws have served us well. They have engendered a normative response in member states to the duty they owe future generations in the march towards sustainable development.[900] In other words, they are appreciated because they have laid a foundation on which future laws can be based. But such normative responses have only been felt in the area of climate change while

[897] Ibid.
[898] C. Batlle, I.J. *et al*., (n. 883).
[899] Judith Lipp, '*Lessons for Effective Renewable Electricity Policy from Denmark, Germany and the United Kingdom*' (2007) 35 Energy Policy 5481-5495.
[900] Catherine Redgwell, '*International Soft Law and Globalization*' in Barry Barton et al (eds.), *Regulating Energy and Natural Resources (Oxford University Press, 2006)* at 103.

issues of energy security through green energy sources have been relegated to the background.

## 8.14 Conclusion

There is a need for a new legal regime for renewable energy technologies based on energy security targets and separate from the existing legal regime which views renewable as both a tool for carbon emission reduction and a tool for achieving energy security. This is because climate change considerations or parameters sometimes conflict with energy security considerations, with the former having a clear advantage.

Also, the 2009 Renewables Directive is deficient in its lack of provisions for punitive measures. Even though articles 256 and 258 of the TFEU contain relevant enforcement mechanisms, the EU is still facing challenges in enforcing legally binding targets agreed under relevant laws. There is a dearth of enforcement proceedings on legally binding renewable energy obligations and conventional energy conservation.. Furthermore, the Electricity Directive and other laws are too broad to be of meaningful impact in the development of renewable energy technologies. Renewables are subsumed under a general energy legal framework with the balance tilted in favour of conventional energy sources.

# CHAPTER NINE

# DRAFT INTERNATIONAL COVENANT ON ENVIRONMENT AND DEVELOPMENT

## 9.1 Introduction

In chapter eight, the evolving legal framework in the EU was examined through some of the salient laws that govern energy generation, including the few dedicated to renewable energy technologies. In view of their deficiencies in the existing legal framework, it is argued that there may be a need for a new legal framework that gives adequate attention to renewable energy technologies. The draft International Covenant on Energy and Environment (DICED) is presented here as a possible starting point. The foreword to the first edition of the DICED provides one of the reasons why the draft is of such importance.[901] It was stated that the draft would provide the legal framework to support the further integration of various aspects of environment and development. [902] This eliminates the tendency of some legal instruments to focus on only environmental considerations as a basis for investments in sustainable energy technologies.

There are other relevant laws in the field of energy but with inherent flaws. For instance, the Statute of the International Renewable Energy Agency lacks enforcement mechamisms to ensure compliance with its provisions on renewable energy, an issue provided for under the DICED. Also, the Energy Charter Treaty appears to be more focused on international energy investment protection rather than the development of sustainable energy sources.

The draft covenant is being developed by the International Union for the Conservation of Nature (IUCN). It is meant to be an international framework for the consolidation and development of existing legal principles and rules relating to environment and

[901] http://cmsdata.iucn.org/downloads/eplp-31-rev-4.pdf. Accessed on 21 October 2016.
[902] Ibid.

development.[903] It is hoped that the draft will become a negotiating document for a global treaty on environmental conservation and sustainable development.[904]

While the transition to a renewable energy-powered economy offers fertile ground for innovation, companies will innovate only if governments offer the necessary regulatory certainty and associated incentives needed to make the necessary and often long term investments in renewable energy technologies.[905] This much was recognized by the World Business Council for Sustainable Development which found out that, in order for business and private capital to play its role in delivering renewable energy technologies, integrated and robust policy frameworks addressing all stages in the technology development cycle are needed.[906]

The assertion finds support in the findings of Dechezlepretre and Sato who stated that stringent environmental regulation can induce innovation activities in clean energy technologies while discouraging research and development in conventional energy (polluting) technologies.[907] This reduces production costs and creates other competitive advantages as the costs of conventional energy sources become higher due to internalization of external costs.[908] The draft covenant is examined to determine whether its provisions can provide a new direction for EU legal framework on renewable energy technologies. After an examination of its content, it is concluded that the draft

[903] IUCN, '*Meeting on the Draft Covenant on Environment and Development in Bonn, January 14-15*' (21 January, 2010). Available at iucn.org/news_homepage/news_by_date/2010_news/January_2010/?4571/Environmental-Law-Center-hosted-meeting-on-the-Draft-Covenant-on-Environment-and-Development> Accessed on 23 May, 2016.

[904] Ileana Johnson Paugh, '*DICED is UN'S Environmental Constitution for the World*' Canada Free Press, March 21, 2012. Available at canadafreepress.com/article/diced-is-uns-environmental-constitution-for-the-world. Accessed on 23 May, 2016.

[905] Celine Kauffmann and Cristina Tebar Less, '*Transition to a Low-Carbon Economy: Public Goals and Corporate Practices*' (2010) 10th OECD Roundtable on Corporate Responsibility 48 http://www1.oecd.org/daf/inv/mne/45513642.pdf. accessed on 7 March, 2014.

[906] WBCSD, '*Investing in a Low Carbon Energy Future in the Developing World*' (2007) www.wbcsd.org/DocRoot/Goofs11Yta5vrU8mgsmQ/WBCSD_Finance.pdf accessed on 7 March, 2014.

[907] Antoine Dechezlepretre and Misato Sato, '*The Impacts of Environmental Regulations on Competitiveness*' (Policy Brief, November 2014). Available at personal.lse.ac.uk/dechezle/Impacts_of_Environmental_Regulations.pdf. Accessed on 2 May, 2016.

[908] Tim Mennel and Ulf Moslener, '*What does Europe Pay for Clean Energy? – Review of Macroeconomic Simulation Studies*' (2008) 36 Energy Policy 1318-1330 at 1319.

could trigger the desired change in policy direction in the area of achieving sustainability in energy production and consumption.

## 9.2 The Draft Covenant

If it is agreed that the present generation has obligations to future generations (as pointed out in chapters two and three), then there might be a need for a new legal framework dedicated to renewable energy technologies. This could enable the obligations to both present and future generations to be carried out. The new legal framework should radically limit the consumption of conventional energy sources and force recourse to renewable energy and other sustainable energy sources. The existing legal framework appears to lack this initiative which is not an entirely new idea. In the late 19th century, international legal treaties were entered into to halt the overexploitation of fish stocks and for the protection of some special species of migratory birds, which required special conservation measures.[909] The case of *Minors Oposa v. Secretary of the Department of Environment and Natural Resources,*[910] is not binding within the EU. The duty to preserve natural resources for future generations has transcended the *Minors Oposa Case* and has appeared in the preamble of several international instruments. For instance, Principle 2 of the Stockholm Declaration states that the natural resources of the earth including the air, water, land, flora and fauna and especially representative samples of natural ecosystems must be safeguarded for the benefit of present and future generations. Most of these are in the form of declarations which are regarded as 'soft law.'

However, it remains to be seen whether this case addresses the issue discussed by the Brundtland Commission on the need for an international ombudsman to protect the interest of future generations. In any case, if (as discussed in chapter three) individuals could make a claim for violation of environmental rights under the European Convention

[909] Ricardo Pereira, '*The Exploration and Exploitation of Energy Resources in International Law*' in Karen E. Makuch and Ricardo Pereira (eds), *Environmental and Energy Law* (Blackwell Publishing Ltd., 2012).
[910] 33 ILM 173 (1994).

on Human Rights, then surely, judicial precedent may be found in the case of *Powell & Rayner v. United Kingdom*[911] (discussed in chapter three), and under which such a claim was brought. It may however be argued that this case has more to do with environmental pollution and not energy security, and as such may not be relevant here. It is however a pointer to the concern raised by the Brundtland Commission on the need for states to recognize the rights of present and future generations to an environment adequate for their health and well-being (well-being here taken to mean sustainable development).

It may be argued that states' anxieties about sovereignty over natural resources and energy security policies may inhibit the political will required to agree and implement international regulation on the generation of energy from renewable energy sources.[912] Scholars like Schrijver have argued that sovereignty over natural resources is not entirely unfettered, but is becoming increasingly limited by environmental obligations (such as climate change obligations) which have a direct impact on energy generation from conventional sources.[913] This probably explains the intent behind the provisions of Article 192(2)( c) which empower the EU to take measures affecting a Member State's choice of energy sources. If states have agreed to surrender part of their sovereignty and be bound in principle by international laws on other issues such as maritime matters, international trade, laws of war, climate change etc, it is difficult to see why surrendering part of their sovereignty on matters pertaining to energy security for the common good should be difficult.

As pointed out in chapter one, while there is no single law at the international level on sustainable energy consumption, the DICED may be a starting point for EU law in this regard. It is based on the fundamental principles of the concept of sustainable development, which require environmental preservation, social and economic development to be integrated. Article one of the DICED states its objective which is

[911] (1990) 12 E.H.R.R. 355.
[912] Stuart Bruce, '*International Law and Renewable Energy: Facilitating Sustainable Energy for All?*' (2013) 14 Melb. J. Int'l L. 18 at 22.
[913] Nico Schrijver, *Sovereignty over Natural Resources: Balancing Rights and Duties* (Cambridge University Press, 1977) 168.

environmental conservation as an indispensable foundation for sustainable development. In essence, the conservation of energy sources is the foundation of sustainable development. Article 13 of the DICED, while recognizing the sovereign rights of states over their natural resources, equally provides that all appropriate measures to avoid wasteful use of natural resources and to ensure the sustainable use of renewable resources are taken. Furthermore, Article 32 of the DICED provides that parties shall reduce and seek to eliminate unsustainable patterns of consumption and production, including the implementation of strategies designed to reduce the use of non-renewable resources. Of special importance is the provision of Article 59 of the DICED entitled 'Offenses.' It provides that parties shall establish, as appropriate, criminal or administrative offenses for violations of environmental law.

While it is acknowledged that the DICED is concerned with wider environmental issues, of which sustainable energy generation and consumption is one, the salient provisions of this international document can be used as a basis for developing a new legal framework for sustainable energy technologies in the EU. The region is in the most precarious situation in terms of energy security, and needs urgent legal solutions to tackle this challenge. The DICED contains specific provisions on resource depletion built on the principles of inter and intra-generational equity. In other words, the sustainable use of natural resources is seen as a precondition for the conservation of nature.

The DICED is aimed at providing an integrated international legal framework for present and future international and national policies and laws on the environment and development, enabling laws to move from being soft to hard.[914] Signatories will therefore have to develop strategies to evolve a legal framework that mandates the development of renewable energy technologies and capping the consumption of remaining conventional energy reserves. This submission is further reflected in Article 63 of the draft which provides that parties are encouraged to become signatories to treaties furthering the objectives of the draft covenant. Article 32 of the 2010 version of

[914] IUCN, '*Draft International Covenant on Environment and Development*' Environmental Policy and Law Paper No. 31 Rev. 2 (3rd edition, IUCN, 2004).

the DICED provides that parties shall seek to develop strategies to eliminate unsustainable patterns of consumption and production and reduce the use of non-renewable resources in the production process.[915]

Furthermore, of note is article 39 of the amended DICED which supports cross border cooperation in ensuring sustainability in the area of conservation of natural resources. The DICED is significant in that it combines environmental protection with development in the context of a hard law treaty. It may therefore be the closest we have to a law codifying the principles of sustainable development. In addition to existing targets under the 2009 Renewables Directive, it is suggested that the new legal framework should impose enforceable limits on the amount of conventional energy produced and consumed every year in each member state. This will not in any way impinge on a state's sovereignty as international regulation offers a pragmatic approach to both human betterment and the avoidance of a collective action tragedy[916] – the tragedy here being a future without energy for development.

It must be said that the DICED covers environmental conservation in general. However, its provisions can serve as a springboard for further development of suitable laws on sustainability in energy production and consumption.

## 9.3 2015 Revised Edition of the DICED

The 5th revised edition of the DICED[917] firmly reiterates the fundamental principles of sustainable development, including the right of present and future generations to development. It further reiterated in its preamble its core mission.[918] This is to provide an integrated international legal framework for a consolidated ecological and ethical foundation for present and future international and national policies and laws on

[915] IUCN, '*Draft International Covenant on Environment and Development*' Environmental Policy and Law Paper No. 31 Rev. 3 (4th edition, 2010).
[916] Martti Koskenniemi, '*The Fate of Public International Law: Between Technique and Politics*' (2007) 70 Modern Law Review 1.
[917] Advance Unedited Version.
[918] Last paragraph of preamble.

sustainable development. What may be gathered from here is that, while the DICED provides an international legal framework for environmental conservation,[919] there is still a need for laws and policies at the regional and national levels on environmental conservation, of which sustainable energy production and consumption is one. Article 14(3) of the 2015 DICED provides that states shall take appropriate measures to avoid wasteful use of natural resources and ensure sustainable use of renewable resources.

The 2015 draft appears to be silent on the issue of an international ombudsman who will protect and enforce the rights of present and future generations to development. But article 15 of the 2015 DICED provides for physical and legal persons whose duty would be environmental protection. An international ombudsman can be 'created' under this section and empowered to enforce salient provisions of the law on sustainability in energy consumption.

Article 36 reiterates the provisions of earlier drafts on sustainability in energy consumption. There is no express mention of renewable energy sources in its provisions. It is however provided under article 36(b) that parties shall ensure that energy is conserved and used as efficiently as possible.

## 9.4 Conclusion

Existing laws have failed to provide adequate cover for development of renewable energy technologies. A new legal framework that will mandate sustainability in energy production and consumption is required. For the first time, we have a draft covenant that makes provisions (under article 63 of the 2015 DICED) for express sanctions to deal with failure to ensure sustainability. This has however been left for the parties to create appropriate offences for violations. It is submitted that enforceability should be left for an international ombudsman to be created pursuant to article 15 of the 2015 DICED as a legal person.

[919] Which is its main objective.

Apart from this, other important articles in the DICED appear to at least make it an appropriate starting point for a new legal framework for the development of renewable energy technologies and ensuring sustainable energy production and consumption. The new legal framework at the EU level will make provision for a legally created ombudsman who will ensure that its provisions are enforced. The legal framework introduce limits on the volume of energy produced and consumed from conventional energy sources are enforce mandatory quotas on investments in green energy sources.

# CHAPTER TEN

# CONCLUSION

## 10.1 Summary

This study was aimed at determining whether the evolving legal framework for renewable energy technologies in the EU is effective enough for the development of these sustainable energy sources. In determining this, the study has tried to establish that there may indeed be a duty on the part of the present generation to ensure sustainability in energy production and consumption on behalf of both present and future generations. This duty has deep theoretical foundations in aspects of the social contract theory and Rawls' theory of justice. The study also linked these theories to the concept of sustainable development, establishing that the concept is a modern reflection of the theories.

The concept of sustainable development provides a conceptual framework for this research. It is seen here as the modern version of the theories backing up this research i.e. aspects of the social contract theory and Rawls' theory of justice. It encapsulates the social, economic and environmental factors needed for all round development as the world strives to achieve its development goals. Furthermore, it establishes the fact that the present generation owes a duty to future generations to ensure sustainability in energy production and consumption and that measures must be put in place to carry out this duty. Legal instruments constitute a lot of the measures that need to be put in place.

Having established a theoretical foundation for this duty, attempts were made to answer the following questions:

1. Does the duty to ensure sustainability in energy production and consumption have roots in legal principles that can form the basis of an effective legal framework?

2. Does the existing legal framework for the development of renewable energy technologies ensure all round economic, social and environmental development?

3. Does the evolving legal framework dedicate enough provisions in existing laws to ensure development of renewable energy technologies?

4. Is there a need for a new legal regime to support the development of renewable energy technologies?

The EU is a net importer of energy. One of the worrying effects of this is the susceptibility of the region to the vagaries of external energy markets, with the attendant effect on energy security. It is also disturbing to note that energy reserves within the EU are being depleted at an alarming rate. The issue of energy reserves for ensuring the sustainable development of present and future generations has therefore become very important. EU energy policy is being developed to ensure energy security within the EU. It may however be said that energy policy must move towards sustainability. In doing this, sustainable energy technologies have to be deployed through the aid of legal instruments.

The obligation to future generations, although rooted in philosophical underpinnings, is increasingly becoming a legal obligation through emerging legal principles that make up the concept of sustainable development. These legal principles act as foundations on which future laws on sustainable energy production and consumption can be based. They have led to the recognition of the obligations in judicial pronouncements and legal documents such as conventions and treaties.

Renewable energy technologies effectively ensure environmental, economic and social development, and can be said to be major factors in the march towards ensuring sustainable development for the EU. Therefore, renewable energy technologies have a major role to play in developing a sustainable energy policy for the EU. A review of chapters five to seven shows that the evolving legal framework for the development of renewable energy technologies ensures that these technologies can contribute to ensuring sustainability in energy production and consumption in the EU.

The steps taken over the years within the EU towards the evolution of a sustainable energy policy point to a realization of the fact that a duty exists in the present generation to plan for both present and future generations on energy production and consumption. The series of policy documents and legal instruments such as the EU Third Energy Package and the 2009 Renewables Directive, although giant steps, have subsumed sustainable energy sources under general energy policy, with no adequate focus on renewable energy sources. Furthermore, existing laws have been overshadowed by climate change goals with the application of inadequate and oftentimes conflicting yardsticks to develop these technologies. In addition, some of the existing laws do not have enough stringent conditions to ensure enforceability.

Even the new 2015 Energy Union suffers from the same defect. The EU Third Energy Package that is supposed to be the engine room of cross-border exchange of electricity has not really crystallized into the much desired central European grid. In other situations, its effect has been felt more by conventional energy producers. Therefore, there may be a need to have a separate legal framework solely dedicated to the development of renewable energy sources to ensure their development. It is submitted that dedicated legal instruments should be put in place to ensure sustainability in energy production and consumption through mandatory consumption of energy from renewable energy sources. An example is the IUCN draft covenant on Environment and Development [920]mentioned under chapter nine which will contain provisions on penalties for failure to ensure sustainability.

Renewable energy technologies can ensure economic development. There can be a seamless transfer from an economy powered by conventional energy sources to an economy powered by renewables. In any case, the growing cost of conventional energy sources is unsustainable. Adequate investments in renewables will enable them to appreciably power the EU economy. These investments may however be difficult to make without legal instruments being put in place to safeguard them and encourage investors.

[920] cmsdata.iucn.org/downloads/eplp-31-rev-4.pdf. Accessed on 21 October 2016.

The environmental development benefits of renewable energy technologies were examined. It was discovered that, even though renewables may have some environmental challenges, they are incomparable with the environmental challenges associated with conventional energy sources. Planning laws ensure that environmental issues are taken into consideration at the beginning of every project. This is important as most environmental laws are focused on the latter stages of the energy project i.e the processing and consumption stages. The LCA technique focuses on the whole process from the early stages to the later stages. The EIA laws within the EU can be made to incorporate this technique to enable all environmental concerns to be addressed at all stages.

A comparative analysis of conventional energy sources and renewable energy sources carried out under the chapter shows that environmental development is best achieved in the energy sector through the utilization of renewables. Planning laws have played a major role in ensuring environmental development through renewable energy technologies. In addition, there are other legal instruments in place. For instance, Directive 2010/31/EU, which intends to ensure a target of zero energy performance for buildings, and commencing from December 2020, ensures the development of renewable energy sources in such buildings.

The social development benefits of renewable energy technologies were also examined. It is of fundamental importance that renewables ensure the continued survival of modern society. In other words, continued reliance on conventional energy sources can lead to societal collapse due to a risk of the world running out of conventional energy sources for development unless there is an urgent but gradual shift to renewable energy sources. One of the social development benefits of renewable energy technologies is social cohesion as recognized under the 2009 Renewables Directive. This is achieved through the active participation of host communities in the development of such technologies.

It was however observed that the various planning and EIA laws that engender social cohesion do not take into consideration the special needs of such host communities in

the development of those technologies beyond environmental considerations. For instance, such laws do not make provision for mandatory equity participation of such communities to encourage positive acceptance of the technologies. Also, it was observed that there was a need for planning laws to include demonstration programmes in their provisions prior to the grant of approval for renewable energy projects. This may reduce the opposition to the grant of such approvals.

One notable feature of renewable energy technologies is that they may provide a non-declining capital stock for development. They therefore have the potential to modify the definition of 'limits to growth' postulated by advocates who insist on 'non-declining capital stock.' What this means is that, once renewable energy technologies come on stream fully, reliance on them will ensure that there is a healthy and constant stock of both conventional and non-conventional sources of energy for development by present and future generations. What needs to be agreed upon is a ratio of production and consumption of the two energy sources, with green energy sources taking an increasing share.

The need for hard laws has been argued in the research. This includes the need for the evolving legal framework to make provision for punitive measures to ensure adequate enforcement. The 2009 Renewables Directive appears not to contain any punitive measures in case of breach of its legally binding terms. Though the draft covenant appears to make provisions for punitive measures, as pointed out in chapter nine, member states are left with the discretion to adopt such measures. This is not enough. There is a need for such measures to be provided for in express terms in the law.

## 10.2 Recommendations

There is a need for an international convention that provides guidelines on how to reconcile the needs of present and future generations. The efforts of the Brundtland Commission in trying to establish an international ombudsman are obviously not enough. There is therefore a need for legal tools on an international ombudsman who

will reconcile the interests of present and future generations on energy production and consumption. The new law proposed should also encompass a fundamental right on the part of future generations to existing natural resources as recognized in the case of *Oposa v. Factoran*. The ombudsman should be delegated with the duty of representing the interest of future generations.

Although the draft covenant may be of global application, it is in the interest of the EU to be in the forefront of its negotiations as it stands to benefit more than any other region of the world from its provisions. This issue is particularly important in view of the perceived comparative economic disadvantage that may be suffered by EU companies which have to factor the cost of green energy taxes into their costs of production. In view of the absence of laws at the international level which provide legal cover for such green energy taxes, non-EU companies may enjoy lesser costs of production as they do not have such taxes to contend with. As mentioned earlier in Chapter One, the EU has, in any case, always been in the forefront of negotiations on environmental matters. The other alternative is to adapt the provisions of the draft to develop a new legal framework dedicated to sustainable energy technologies.

Through Article 194(1) TFEU, which contains the goals of the EU on energy matters, the EU now has a stronger legal framework and legal basis to act on the evolution of a new legal framework to ensure sustainability in energy production and consumption. Particularly, Article 122 of the TFEU mandates it to make proposals to the Council on energy matters by recommending a new line of action. Article 192(2)(c ) of the treaty should be highlighted here. It states that the council shall, acting unanimously, adopt measures that significantly affect a member state's choice between different energy sources. The unanimity required here may appear to be a stringent condition that may never be met. Rather, it is suggested that council's decision should be based on a majority of votes cast by member states.

Such a decision should cover actions taken on the suggested laws on sustainable energy production and consumption. There is a need for the laws to mandate conventional energy producers to gradually introduce renewable energy technologies

into their produced energy mix. One way of doing this is though the retraining of staff (as mentioned under Chapter five). This will act as an assurance that revenue streams will not after all dry up when the transition to a renewable energy-powered economy reaches an advanced stage. In line with this mandatory transition, conventional energy producers will be mandated to achieve certain targets annually on green energy production, subject of course to annual reviews.

The bottom line however is that, though the law has a major role to play in ensuring energy security for the EU, and has actually done a lot, it still has a long way to go. While there may be a need for a new legal regime, the final chapter itemizes some outstanding issues that cannot be resolved in this research and recommends them for further research.

## 10.3 Further Research

An issue that is yet to be settled and may be a basis for further research is whether there is a need for a harmonious support scheme for the EU or whether individual member states should be free to determine the support schemes best suited for their local circumstances. There is presently a tendency towards market forces however.

Another issue that needs further research is whether it is appropriate to combine EU climate and energy polices in view of the observations made in the research about possible conflicts between the two.

Another issue that also needs further clarification is whether the new Energy Union of 2015 is capable of making radical changes to existing EU energy policy or whether it is just a mere improvements on earlier developments.

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